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Samshodhana Sagara

2019 -2020

Book of Research Abstracts
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Dedications

Founders who crafted our Institutions

Late Shri. R. Dayananda Sagar

Dayananda Sagar Institution is named in honour of its founder president Late Shri R Dayananda Sagar. He was a great, confident leader who saw no reason why, as an Indian, he could not provide education for all sections of society. Best known for his pivotal role in setting up the Mahatma Gandhi Vidya Peetha Education Trust (MGVP), Late Shri R Dayananda Sagar also played an important role in the education sector of the emerging India.

Late Smt. Chandramma Sagar

Wife of the founder, Late Smt Chandramma Sagar was a Doctor by profession - a Triple FRCS from London, Edinburgh and Glasgow. She was in the panel of Doctors for the President of India.

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Editorial Committee

Message from the Hon. Chancellor

The year 2019-2020 at DSU proved to be another milestone in the journey towards the pursuit of excellence in the higher education space as we operationalized Medical Education and Research with the establishment of *Dr. Chandramma Dayananda Sagar Institute of Medical Education and Research (CDSIMER)*and established the **DSU-KSCST IP Cell** in collaboration with Karnataka State Council for Science and Technology (KSCST) to enable faculty members, scholars and students filing for patents on their research findings.

The first batch of the University's Ph.D Scholars graduated with their doctorate degrees during the year. Funded research Projects with grants from Central & State Government organizations, consultancies in collaboration with various companies, patent applications and research publications done in National/International Journals & Conferences continue to grow at the University. **Samshodhana Sagara 2019-20**, the Book of Research Abstracts by the faculty members, research scholars and students at DSU has been brought out to showcase the active research carried out at the University in the last Academic year. Chronicling research accomplishments into such a Book of Abstracts will expand the frontiers of research, consultancy and contribute to the society.

Dr. D. Hemachandra Sagar
Chancellor – Dayananda Sagar University

Message from the Hon. Pro Chancellor

Presence of pure and applied research, delivery of research-led teaching, and high proportion of postgraduate research programmes are a few characteristics of successful Universities with research as the mainstay. Teaching at both undergraduate and postgraduate degree level and conducting work in multi-disciplinary areas should have research output. University rankings across the globe consider many parameters, important ones being research, teaching and impact, to assess the performance on the global stage.

Research work done by the faculty, research scholars and students of a University needs to be recorded for initiating, motivating, enhancing & showcasing the research outputs conducted and published during an academic year on a regular basis. Hence the decision to publish the scholarly pursuits of DSU's brilliant team of faculty members, research scholars and students in '**Samshodhana Sagara 2019-2020',** DSU's Book of Abstracts, an annual publication from the University. Collaborations and research grants from Central and State Government agencies and Private Organizations are also listed in the Samshodhana Sagara.

Generating IPs are also an important outcome of research and in this direction, DSU has also established '**DSU-KSCST IP Cell** in collaboration with the Karnataka State Council for Science and Technology (KSCST) to enable faculty team, research scholars and

students for filing patents to safeguard the IPs of their research findings with potential business value.

The outcome of research initiatives in a young University are also reflected in the commencement of award of doctorate degrees. In this regard, DSU is proud to award doctorate degrees to the first batch of research scholars from the year 2020. DSU endeavors in all its activities to strive ahead in its pursuit to contribute to the welfare of humanity and society at large, through its initiatives of teaching, research & consultancy.

Dr. D. Premachandra Sagar
Pro Chancellor –Dayananda Sagar University

Message from the Hon. Vice Chancellor

Dayananda Sagar University (DSU), established by Mahatma Gandhi Vidya Peetha (MGVP) Trust under Karnataka Act No 20 of 2013, is a State Private University that started its programs of study from the academic year 2015-16. DSU is being mentored and nurtured by its visionary Chancellor Dr. Hemachandra Sagar and proactive Pro Chancellor Dr. Premachandra Sagar who both are highly qualified. DSU offers UG and PG in addition to PhD programs at present in the areas of Engineering, Commerce, Management, Applied Science, Health Science and Arts as well as Humanities. Offering high quality education to the students by providing world-class infrastructure, industry partnered innovation labs, qualified faculty, employability oriented curriculum and ample opportunities for learning to become competent professionals in their fields of specialization has been the tradition of DSU. DSU has also set up Dayananda Sagar Entrepreneurship Research Business Incubator (DERBI) and Atal Incubation Centre (AIC), with the support of Government of India, to promote entrepreneurship and innovation. In just 5 years, DSU is recognized as one among progressive private universities in the State of Karnataka. We are very happy to announce that the new DSU campus of 120 acres in coming up at Harohalli on Kanakapura Road near Bengaluru and this new campus is going to become operational from the Academic Year 2020-21 with the starting of DSU medical school namely Dr. Chandramma Dayananda Sagar Institute of Medical Education and Research (CDSIMER).

DSU encourages research among its faculty and students by providing the requisite support in creating high-end research facilities, providing research seed grant, supporting conference travel, organizing conferences, and the filing of patents. Each of these initiatives will help DSU to recognize itself as a teaching plus research centric university in the coming

years. DSU has been bringing out a book of research activities (named as **"Samshodhana Sagara"**) to record the research achievements. This book contains the research accomplishments of Academic Year i.e., August 01, 2019 to July 31, 2020. The year has been a moderately good year for DSU as it could accomplish 148 International and 7 national Journal publications, 51 International and 3 national Conference papers, 17 International book chapters, filing of 1 patent, securing 11 sponsored projects and working on 2 consulting assignments. We have recorded all these accomplishments in '**Samshodhana Sagara 2019-2020'** and determined to achieve higher quality research accomplishments in the years to come to ensure a unique position for DSU in higher education sector of the country.

The research activities at DSU were affected from March 2020 onwards on account of Covid-19 **pandemic** as both students and faculty stopped coming to the campus for safety considerations. DSU started operating in a "new normal" condition (a new way of living, learning, working and social interactions) ensuring the continuity of academic and research activities. DSU thanks all the contributing faculty for their continued interest, enthusiasm and hard work.

We take this opportunity to thank BOG, BOM, AC, RIC and FC for their solid backing and cooperation. We gratefully acknowledge the encouragement and support received from Dr. Hemachandra Sagar (Chancellor of DSU and Chairman of MGVPT) and Dr. Premachandra Sagar (Pro Chancellor of DSU and Vice Chairman of MGVPT), Ms. Tintisha Sagar (BOG member and Joint Secretary of MGVPT), Mr. Rohan Sagar (BOG member and Joint Secretary of MGVPT), Mr. Galiswamy (Secretary of MGVPT), Prof. H.P.Khincha (DSU Evangelist) and Mr. K. Jairaj (DSU Advisor and Former Additional Chief Secretary of GOK) in achieving this success. On behalf of research active faculty of DSU, we assure that the accomplishments in the next academic year would be bigger and better both in quality and quantity.

I am delighted, as Vice-Chancellor of DSU, to place the '**Samshodhana Sagara 2019-2020'** in your hands. We would be highly obliged, as ever, to receive your valuable feedback and inputs for scaling up the high quality research activities at DSU.

Dr. K.N. Balasubramanya Murthy,
Vice Chancellor - Dayananda Sagar University

Foreword by the Registrar

'**Samshodhana Sagara 2019-2020',** is an annual compilation of the abstracts of research publications, on-going funded projects and consultancy assignments that have been done by the Faculty Members and Research Scholars of Dayananda Sagar University (DSU) during the period of 1st August'2019 to 31st July'2020 which is especially dedicated to our respected and beloved Founders, Late Shri R Dayananda Sagar and Late Smt. Dr. Chandramma Sagar. We are also thankful to the Management of DSU for their continuous support and guidance.

The present edition of '**Samshodhana Sagara 2019-2020'** highlights 227 abstracts of publications that resulted from the research work conducted by our Faculty Members and Research Scholars belonging to different Schools of DSU i.e. the School of Basic & Applied Sciences, School of Engineering, School of Commerce and Management & the School of Health Sciences, which were successfully published in various reputed International & National Journals, presented at various International & National Conferences, selected as Book Chapters and accepted for Patent. The book also lists eleven on-going funded projects & two consultancy assignments of DSU.

This annual compendium of '**Samshodhana Sagara 2019-2020'** also reflects the numerous initiatives & collaborations that our Faculty Members and Research Scholars have been forging among their network of peer group of researchers in various national and international Institutions of higher learning, in their endeavor to conduct and carry out quality, industry relevant and socially useful research activities involving the use of science, technology, engineering, management and health sciences domains.

Dayananda Sagar University (DSU) promotes an active culture of teaching, research and consultancy among all Faculty members, students and research scholars across all its Schools/Departments/Colleges. DSU has a focused effort to advance knowledge and focus on inter-disciplinary research.

With a plethora of doctorates from IITs, IISc, TIFR, NITs and other Universities, research at DSU compares with the best that India has to offer. Innovative research projects in Biological Sciences. Management, Engineering, Nursing, Pharmacy & Physiotherapy all offer a rich stimulating research environment.

'**Samshodhana Sagara 2019-2020'** thus celebrates the research related accomplishments of the University's Faculty and Research Scholars during the year.

Dr.Puttamadappa C,
Registrar-Dayananda Sagar University

From the Editorial Board

We are happy to bring out the 5th Edition of '**Samshodhana Sagara 2019-20'**, the collection of research publications and the presentations made by the faculty members and the research scholars in various International and National conferences in the Academic Year 2019-20. We have attempted to include only such publications which are published in peer reviewed journals. Books and Book chapters published by the faculty members in International Publications are also made part of 'Samshodhana Sagara'. This collection also provides the list of Research projects which are funded by DST, SERB/DST, DBT, GST and other funding agencies. There are 155 publications in International and National Journals, 54 International & National Conference presentations, 17 Book Chapters and a Patent Publication. There are eleven on-going Projects and two Consultancy assignments for the year.

This Edition of '**Samshodhana Sagara 2019-2020'** is dedicated to Late Barrister Shri R. Dayananda Sagar and his better half, Late Smt. Dr. Chandramma Sagar, triple FRCS from London, Edinburg and Glasgow, the founders of Mahatma Gandhi Vidya Peetha Trust, on the eve of Centenary Celebrations of Late Barrister Shri R. Dayananda Sagar.

We take this opportunity to thank, Dr. D Hemachandra Sagar, the Chancellor and Dr. D Premachandra Sagar, Pro-Chancellor who have been very supportive in bringing out this Edition and approving the same. Our sincere thanks are due to Prof. K N Balasubramanya Murthy, our Hon. Vice Chancellor who insists on only quality publication without exception and his encouragement in every stage of bringing out this Edition. We also thank Prof. R. Janardhan and Prof. K. Muthuchelian, the Pro Vice Chancellors for their help in this initiative. We thank profusely Prof. Puttamadappa C, the Registrar, for his constant support in various initiatives taken up by the Research Cell.

I thank all my colleagues in the Editorial Board from various Departments, Colleges and Schools who have helped us in editing this collection and bringing out this Edition.

We sincerely hope that more quality publications are accomplished by our faculty members and research scholars in the years ahead.

We will be thankful for any feedbacks and suggestions for improving the quality and look and feel of 'Samshodhana Sagara' in the future.

Dr. M K Banga,
Dean Research - Dayananda Sagar University.

For Editorial Board.

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MGSIJ-02	**A.Nagaraj Subbarao,** Pierre Al-Khoury, Mansour Al-Shamali	The New Paradigm of Supply Chain Performance: Orchestrated Structure	International Journal of Supply Chain Management (IJSCM): Vol 8, No 4 (August 2019)	73
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CHIJ-02	**L. Shreenivasa**, R T Yogeeshwari, R Viswanatha, Ganesan Sriram, Yogesh Kalegowda, Mahaveer D Kurkuri and **S Ashoka**	An introduction of new nanostructured $Zn_{0.29}V_2O_5$ cathode material for lithium ion battery: a detailed studies on synthesis, characterization and lithium uptake	Materials Research Express Volume 6, 115035, 2019	92
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Department of Mathematics
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Department of Physics
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PHYI C-03	**Anshika G, Baishali G**	Effect of sensing layer thickness on the performance of a reduced Graphene oxide based Photon detector	2019 Workshop on Recent Advances in Photonics (WRAP) Publisher: IEEE DOI: 10.1109/WRAP4748 5.2019.9013725	114

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ASEIC-02	Gireesh Y, D. B. Singh, **G. K. Suryanarayana,** Rinku Mukherjee	Passive control of transonic buffet oscillations over a launch vehicle using aerospike	Proceedings of International Conference on Advanced Trends in Mechanical and Aerospace Engineering (ATMA-2019), 7-9 November 2019	118

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CSEIJ -02	**Praveen Kulkarni Rajesh T M**	Analysis on techniques used to recognize and identifying the Human emotions	International Journal of Electrical and Computer Engineering Volume.10, No. 3, pp. 3319-3326 ISSN: 2088-8708, DOI: 10.11591 June 2020 Indexed: Scopus	121
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CSEIJ -04	**Shaila SG, Gurudas VR**	Review on Neural Network based Techniques for Detection of Breast Cancer Cells	TEST Engineering and Management, Vol 82, ISSN: 0193 – 4120, pp. 184-191, Feb 2020 Indexed: Scopus	123
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CSEIJ -07	**Sailaja Mulakaluri, Girisha G S**	Review: Mass Screening framework for children with dyslexia using IOT and computing analysis	EAI Endorsed Transactions on Internet of Things doi: 10.4108/eai.13-7-2018.165504 30th June 2020	125
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CSEIJ -12	**S.R. Reeja, Murthuza Ali Baig**, Rino Cherian; K. Jothimani	A survey and development on context-aware monitoring in healthcare with big data	International Journal on Big Data Intelligence, Vol. 7, No. 2, Copyright © 2020 Inderscience Enterprises Ltd. May 2020	129

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CSEIJ -14	Norman Dias **S. R. Reeja**	An Improvement of Compelling Graphical Confirmation Plan and Cryptography for Upgrading the Information Security and Preventing Shoulder Surfing Assault	Advances in Intelligent Systems and Computing Journal, vol 1070. Springer, Cham. © Springer Nature Switzerland AG 2020 pp. 435–453, 2020. https://doi.org/10.1007/97 8-3-030-32523-7_30 December 2019	131
CSEIJ -15	Kiran J Waghmare, **Reeja S R**	A Computational Intelligence Paradigm with Human Computer Interface Learning	International Journal of Innovative Technology and Exploring Engineering (IJITEE) ISSN: 2278-3075, Volume-9 Issue-2S, December 2019	131
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CSEIJ -21	Mahesh D S, Chandramouli H, **Sanjay R Chitnis**	Optimized Uplink Scheduling Model through Novel Feedback Architecture for Wimax Network	International Journal of Innovative Technology and Exploring Engineering (IJITEE) ISSN: 2278-3075, Volume-9 Issue-1, November 2019	137
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CSTIJ-03	**Shwetha BN, Jasma Balasangameshwara**	Dynamic Pricing Techniques in Demand-Side Management of Smart Electricity Grids: A Review	International Journal of Advanced Science and Technology, Vol. 29, No. 10s, Pages 7025-7032, May 2020	155
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CSTP-01	R Nedunchezhian, Dr. M Rajalakshmi, **Jasma Balasangameshwara**, RS Somasundaram, K Sathya & S Balamurugan	Smart Mobile Mosquito Trap Device	Application Type: Ordinary Application Number: 202041009996 Date of Filing: 08-03-2020	156

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ECEIJ -02	K. Nishanth Rao, **Vaibhav Meshram**, H. N. Suresh	Synthesis of ultra wideband tightly coupled array with RFSS by using particle swarm optimization algorithm	Microwave and Optical Technology Letters. 2020;1–8,DOI:10.1002 / mop.32526, 7 Jan-2020	158
ECEIJ -03	Kiran B, **Vaibhav A Meshram**	Design and Performance Evaluation of Ideal and Non-Ideal Effects of Pipeline ADC using Software Reference Models	International Journal of Recent Technology and Engineering (IJRTE) ISSN: 2277-3878, Volume-8 Issue-3, September 2019	159
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BIOIJ-01

TTC9A deficiency induces estradiol-mediated changes in hippocampus and amygdala neuroplasticity-related gene expressions in female mice

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Abstract

The involvement of tetratricopeptide repeat domain 9A (TTC9A) deficiency in anxiety-like responses and behavioral despair through estradiol action on the serotonergic system has been reported. Emerging evidence suggests that estradiol is a potent modulator of neuroplasticity. As estradiol and neuroplasticity changes are both implicated in mood regulation, and estradiol activity is negatively regulated by TTC9A, we hypothesized that the behavioral changes induced by Ttc9a$^{-/-}$ is also mediated by neuroplasticity-related mechanisms. To understand the effects of TTC9A and estradiol modulation on neuroplasticity functions, we performed a behavioral analysis of tail suspension immobility and neuroplasticity-related gene expression study of brain samples collected in a previous study involving ovariectomized (OVX) Ttc9a$^{-/-}$ mice with estradiol or vehicle treatment. We observed that OVX-Ttc9a$^{-/-}$ mice had significantly reduced the tail suspension immobility compared to OVX-Ttc9a$^{-/-}$ estradiol-treated mice. Interestingly, there was an upregulation in gene expression of tropomyosin receptor kinase B (Trkb) in the ventral hippocampus, as well as brain-derived neurotrophic factor (Bdnf) and postsynaptic density protein-95 (Psd-95) in the amygdala of OVX-Ttc9a$^{-/-}$ mice compared to those treated with estradiol. These findings indicate that estradiol plays an inhibitory role in neuroplasticity in Ttc9a$^{-/-}$ mice. These observations were not found in the wildtype mice, as the presence of TTC9A suppressed the effects of estradiol. Our data suggest the behavioral alterations in Ttc9a$^{-/-}$ mice were mediated by estradiol regulation involving neuroplasticity-related mechanisms in both the hippocampus and amygdala regions.

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BIOIJ-02
Molecular and Biological Mechanisms of Apoptosis and its Detection Techniques

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Abstract

Apoptosis (programmed cell death), a self-destructive cellular mechanism, is essential for various events like sculpting the body, responding to any abnormalities, and removal of unwanted/damaged cells. Either too little or a high level of apoptosis causes conditions, such as chronic neurodegenerative maladies including Alzheimer's and Parkinson's diseases and cancer, i.e., an uncontrolled cell development. A typical apoptotic process includes cell shrinkage, degradation of DNA and mitochondrial breakdown, formation of blebs, cell fragmentation, release of nucleotides and phosphatidylserine on the surface of the cell, evoking an "eat-me" sign to the phagocytes. The detection of cell death in cells and tissues has gained immense therapeutic potential. Although many key proteins of the cell cycle machinery and apoptotic signaling pathway have been identified, the molecular mechanisms of these proteins are still not clear. This review attempts to summarize the fundamental aspects and the molecular mechanism of apoptosis, recent advances in detection methodologies, as well as some of the negative aspects of the applied techniques.

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BIOIJ-03
In vitro and in vivo inhibitory effects of *Tabernaemontana alternifolia*

against *Naja naja* venom

M.S. Vineetha[a], **J. Bhavya**[a], S.M. Veena[b], Kiran K. Mirajkar[c], Uday Muddapur[d], K.S. Ananthraju[e], **Farhan Zameer**[a], **Sunil S. More**[a],

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Abstract

Background: Tabernaemontana alternifolia root is traditionally used and practiced among few Indian tribes as an antidote for snakebites.

Objective:To combat and neutralize Naja naja venom using methanolic root extract of Tabernaemontana alternifolia and to explore its efficacy on venom biomarkers in search of newer herbal antidote or first-aid-point of care for therapeutics. Materialization. Pharmacological activities such as fibrinogenolytic, direct and indirect hemolytic activities for the neutralization of the venom were evaluated. Lethal toxicity annulation studies were performed using themurine model by pre-incubation and post-treatment protocols. Further, the neutralization of edemaand myotoxicity were also evaluated.

Results:Electrophoretic analysis revealed that the complete neutralization of fibrinogen degradation wasobserved at 1:10 (w/w) (venom to extract).T. alternifoliaexhibited an effective dose (ED50) value of87.20mg/mL for venom-induced hemolysis. Venom at 2mg concentration produced 11 mm of hemolyticradiance and was neutralized at 1:20 (w/w) venom to extract concentration. The survival time and theneurotoxic symptoms in mice were concluded to be delayed by both the methods of lethal toxicity inhi-bition using methanol extract. The edema ratio reduced the venom to extract ratio of 1:20 (w/w) from173 ± 45% to 133.61% when subjected to 5mg of venom concentration. The plant extract significantly neu-tralized the myotoxic activity.Conclusion: T. alternifoliamethanolic root extract could be a potent contributor in the effective treatment of N. najavenom-induced toxicity.

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BIOIJ-04

Markers of Malignant Prostate Cancer Cells: Golgi Localization of α-Mannosidase 1A at GM130-GRASP65 Site and Appearance of High Mannose N-glycans on Cell Surface

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Abstract

The ability to distinguish malignant from indolent prostate cancer cells is critically important for identification of clinically significant prostate cancer to minimize unnecessary overtreatment and sufferings endured by patients who have indolent cancer. Recently, we discovered that loss of giantin function as the primary Golgi targeting site for endoplasmic reticulum-derived transport vesicles in aggressive prostate cancer cells caused a shift of the Golgi localization site of α-mannosidase 1A to 130 KDa Golgi matrix protein (GM130)-65 KDa Golgi reassembly-stacking protein (*GRASP65*) site resulting in emergence of high mannose N-glycans on *trans*-Golgi enzymes and cell surface glycoproteins. To extend this observation, we isolated two cell clones (Clone 1 and Clone 2) from high passage LNCaP cells, which exhibited androgen refractory property missing in low passage LNCaP cells, and characterized their malignant property. We have found that comparing to Clone 2, which does not have cell surface high mannose N-glycans and exhibits localization of α-mannosidase 1A at giantin site, Clone 1 displays cell surface high mannose N-glycans, exhibits localization of α-mannosidase 1A at GM130-GRASP65 site, and shows a faster rate of closing the wound in a wound healing assay. The results indicate that Golgi localization of α-mannosidase 1A at GM130-GRASP65 site and appearance of cell surface high mannose N-glycans may serve as markers of malignant prostate cancer cells.

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BIOIJ-05

Dual pharmacological inhibitor of endocannabinoid degrading enzymes reduces depressive-like behavior in female rats

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Abstract

Major depressive disorder (MDD) is common, often under-treated and a leading cause of disability and mortality worldwide. The causes of MDD remain unclear, including the role of the endocannabinoid system. Intriguingly, the prevalence of depression is significantly greater in women than men. In this study we examined the role of endocannabinoids in depressive behavior. The levels of endocannabinoids, N-arachidonoyl ethanolamide (AEA) and 2-arachidonoyl glycerol (2-AG) were measured along with brain derived neurotrophic factor (BDNF) in postmortem ventral striata of female patients with MDD and non-psychiatric controls, and in Wistar Kyoto (WKY) rat, a selectively inbred strain of rat widely used for testing the depressive behavior. The effect of pharmacological elevation of endocannabinoids through inhibition of their catabolizing enzymes (fatty acid amide hydrolase [FAAH] and monoacyl glycerol lipase [MAGL]) on depressive-like phenotype was also assessed in WKY rat. The findings showed lower levels of endocannabinoids and BDNF in the ventral striata of MDD patients and WKY rats. A dual inhibitor of FAAH and MAGL, JZL195, elevated the endocannabinoids and BDNF levels in ventral striatum, and reduced the depressive-like phenotype in female WKY rats. Collectively, our study suggests a blunted ventral striatal endocannabinoid and BDNF signaling in depressive behavior and concludes that endocannabinoid enhancing agents may have an antidepressant effect.

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Genome-wide analysis of mammary gland shows modulation of transcriptome landscape with alternative splice variants in Staphylococcus aureus mastitis in mice

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Abstract

Epidemiological mapping shows Staphylococcus aureus to be the leading mastitis causing pathogen in India with diverse genetic lineages circulating in the dairy cattle population. We previously reported that endemic clonal strains of S. aureus isolated from subclinical mastitis lead to specific alteration of epigenetic modulators resulting in deviating immune response in intramammary infection mouse model. However, the extent of transcriptome modulation and associated alternative splicing in S. aureus mastitis is poorly understood. Hence, to gain a deeper insight of the extent of modulation of transcriptome landscape, we expanded the study here using high throughput, paired-end RNA sequencing analysis of the mouse mammary gland inoculated with three strains of S. aureus (SA1, SA2, and SA3) possessing specific genotype, virulence and enterotoxin traits. Overall, we detected 35,878 transcripts in S. aureus inoculated mammary gland, 23% more than those annotated in the reference genome. Expression of 20,756 transcripts was 1 fragment per kilobase of transcript per million mapped fragments and 25.95% of multi-exonic genes were alternatively spliced. We noted Alternative Splicing (AS) events for 100 immune-related genes. S. aureus infection quantitatively altered AS events in mice mammary gland. Collectively, the majority of differentially expressed significant genes clustered into immune-associated, cell adhesion and metabolic process categories. We observed AS events for 379 transcripts of genes putatively encoding several splicing associated proteins and transcription factors besides inflammatory mediators. The present analysis provides new insights into global transcriptome landscape and AS events in host-defense related genes in response to S. aureus intramammary infection, suggesting the need for studies focusing on multi-target and/or network therapeutics approach to combat mastitis

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BIOIJ-07

Effects of autozygosity on a broad range of human phenotypes

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Abstract

In many species, the offspring of related parents suffer reduced reproductive success, a phenomenon known as inbreeding depression. In humans, the importance of this effect has remained unclear, partly because reproduction between close relatives is both rare and frequently associated with confounding social factors. Here, using genomic inbreeding coefficients (F_{ROH}) for 1.4 million individuals, we show that F_{ROH} is significantly associated ($p < 0.0005$) with apparently deleterious changes in 32 out of 100 traits analysed. These changes are associated with runs of homozygosity (ROH), but not with common variant homozygosity, suggesting that genetic variants associated with inbreeding depression are predominantly rare. The effect on fertility is striking: F_{ROH} equivalent to the offspring of first cousins is associated with a 55% decrease [95% CI 44-66%] in the odds of having children. Finally, the effects of F_{ROH} are confirmed within full-sibling pairs, where the variation in F_{ROH} is independent of all environmental confounding.

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BIOIJ-08
Biotransformation of longifolene by *Penicillium europium*

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Biocatalysis and Biotransformation (2020), Taylor and Francis

Abstract

A fungal species was screened from a forest soil by enrichment agar plating method with longifolene as only carbon source. It was identified as Penicillium europium. The isolated fungus transformed the longifolene into various metabolites, of which 12 were isolated in pure form. The characterisation of these transformed compounds was carried out by physicochemical methods involving spectral studies. Attempts were made to find out the pathways of the transformation of longifolene with the help of oxygen uptakes studies, tetranitromethane (TNM) tests and structures of acid and neutral metabolites. The biological transformation of longifolene was found to proceed simultaneously by 4 different schemes of pathways. As the longifolene metabolites are playing a big role in perfumery, P. europium can be utilised in the production of necessary raw materials for perfumes.

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BIOIJ-09

Structure of cyclin-dependent kinase 2 (CDK2) in complex with the specific and potent inhibitor CVT-313

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Abstract

CVT-313 is a potent CDK2 inhibitor that was identified by screening a purine-analogue library and is currently in preclinical studies. Since this molecule has the potential to be developed as a CDK2 inhibitor for cancer therapy, the potency of CVT-313 to bind and stabilize CDK2 was evaluated, together with its ability to inhibit aberrant cell proliferation. CVT-313 increased the melting temperature of CDK2 by 7°C in thermal stabilization studies, thus indicating its protein-stabilizing effect. CVT-313 inhibited the growth of human lung carcinoma cell line A549 in a dose-dependent manner, with an IC_{50} of 1.2 μM, which is in line with the reported biochemical potency of 0.5 μM. To support the further chemical modification of CVT-313 and to improve its biochemical and cellular potency, a crystal structure was elucidated in order to understand the molecular interaction of CVT-313 and CDK2. The crystal structure of CDK2 bound to CVT-313 was determined to a resolution of 1.74 Å and clearly demonstrated that CVT-313 binds in the ATP-binding pocket, interacting with Leu83, Asp86 and Asp145 directly, and the binding was further stabilized by a water-mediated interaction with Asn132. Based on the crystal structure, further modifications of CVT-313 are proposed to provide additional interactions with CDK2 in the active site, which may significantly increase the biochemical and cellular potency of CVT-313.

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BIOIJ-10
Role of Free Radical Scavenging Activity of Vasoactive Intestinal Peptide in the Attenuation of Mitochondrial Dysfunction to Ameliorate Dextran Sulphate Sodium-Induced Colitis in Mice: Implications in Ulcerative Colitis

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Abstract
To evaluate the efficacy of Vasoactive Intestinal Peptide in treating ulcerative colitis targeting colonic mitochondrial dysfunction by virtue of its free radical scavenging properties for maintenance of colon mucosal tract.
Methods:
This study primarily involved an *in vivo* murine model wherein DSS was administered to induce colitis in C57BL/6J mice @ 3.5%/gm body weight for 3 cycles of 5 days each followed by i.p. dose of VIP @ 0.5 nmol/mouse/day for next 10 days. Post-treatment mice were sacrificed and colon samples were utilized for further experimentation. To substantiate the *in vivo* findings and identify the reactive species involved in the progression of ulcerative colitis, Caco-2 cells were subjected to DSS (5%) treatment for 24 h at 37°C with or without Vasoactive Intestinal Peptide (10 nM) in the presence and absence of specific free radical scavengers and antioxidants.
Results:
Treatment with Vasoactive Intestinal Peptide reduced histopathological severity of colitis and cell death markers in murine model leading to partial recovery of inhibited mitochondrial respiratory complexes, altered mitochondrial membrane potential and lowered ATP generation. Interestingly, *in vitro* treatment with Vasoactive Intestinal Peptide restored mitochondrial functions and its efficacy proved at par with SOD and DMSO indicating involvement of $O_2^{\bullet-}$ and $^{\bullet}OH$ in the progression of ulcerative colitis. However, catalase, L-NAME and MEG proved ineffective indicating non-involvement of H_2O_2, NO and $ONOO^-$ in ulcerative colitis.
Conclusions:
Vasoactive Intestinal Peptide by virtue of its free radical scavenging properties can act as a potent anti-colitogenic agent reversing colonic mitochondrial dysfunction for treatment of ulcerative colitis.

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BIOIJ-11
In Vitro Neutralization of *Naja naja* Venom Enzymes by Folk Medicinal Plant Extracts

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Abstract

Medicinal plants are known to possess pharmacologically active compounds which have therapeutic properties and number of plants have been evaluated in disease management including venomous bites. Products of plant extracts are thus gaining importance because of their easy availability, low cost and less side effects and are evaluated for their antidote potential against Indian cobra (*Naja naja)* venom enzymes. *In vitro* enzyme inhibitions such as anti-proteolytic, anti-phospholipase, anti-hyaluronidase, anti-acetylcholine esterase and pharmacological studies (anti- hemolytic activity and anti-fibrinogenolytic activity) were evaluated for aqueous ethanolic extracts and organic extracts of *Clerodendrum serratum*, *Azadirachta indica*, *Aegle marmelos*, *Aristolochia indica, Citrus limon*, *Calotropis gigantea*, *Cryptolepis buchanani* and *Butea monosperma* on *N. naja* venom*.* Significant inhibitions were observed by both the extracts. However, it is interesting to note that aqueous extracts significantly inhibited phospholipase activity and organic extracts inhibited fibrinogenolytic activity of venom. The hyaluronidase activity was not observed in the venom. Indirect hemolytic assay revealed the potential of *Butea monosperma* extracts to completely neutralize the lysis of red blood cells (RBC) induced by cobra venom. The isolation of bioactive principles or a combination of these active principles, from the tested medicinal plants for *ex vivo* and *in vivo* anti-venom activity has to be validated by active isolated compound from extract which is responsible for neutralizing toxic snake venom enzymes

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Hypothetical model of Dual Oxidase

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Abstract

The present study focused on theoretical modeling of dual oxidase (UniProt Id: Q9VQH2) of Drosophila melanogaster by comparative homology modeling. It plays an important role in innate immunity limiting microbial proliferation in the gut and acts downstream of a hh-signaling pathway to induce the production of reactive oxygen species (ROS) in response to intestinal bacterial infection. It may also generate antimicrobial oxidative burst through its peroxidase-like domain (UniPrort annotated data). The model is further energy minimized and validated by various Bioinformatics tools such as ProCheck, ERRAT, ANOLEA, VERIFY 3D etc. The model is visualized by PyMol software.

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NATIONAL CONFERENCE PUBLICATIONS

BIONC-01
Dysbacteriosis mediated Urolithiasis via Claudin Epigenetics: Insights into gut-kidney trafficking

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Abstract

Urolithiasis is a clinical manifestation marked by the formation of stones in urinary tract. It is one of the most actively progressing diseases with high prevalence and reoccurrence. Lithiasis is a metabolic disorder that is strongly associated with a combination of several factors like diet, genetic makeup, gender and environmental conditions. Kidney stones are usually composed of mixed mineral substances of which calcium oxalate stones being the most common. Struvite stones are result of urinary tract infections, microorganisms possessing urease enzyme like *Proteus, Providencia, Klebsiella, Pseudomonas and enterococci*. There are various genes reported for having a role in physiopathology of urolithiasis namely VDR, CASR, MGP, CLDN 14, CLDN 16, CLDN 19. Among which calcium sensing receptor (CASR) and tight junction proteins are crucial in calcium transport. Recent studies have revealed that COM crystals can cause tight junction disruption of renal tubular epithelial cells. Claudin proteins are regulated by microRNAs (miR-9 and miR-374) which directly target the 3'-UTR of Claudin mRNA causing translational repression. The variation in diet will lead to the alteration of gut microbiome, which in turn results in several diseases including urolithiasis. Deficiency of *Oxalobacter formigenes* leads to increased absorption of oxalate which ultimately increases the urinary oxalate contributing to the development of kidney stones. The current study aims to decipher the complexity of stone formation at a molecular-level by understanding calcium transport via Claudins tight-junction proteins and their regulation by miRNAs. Further, the study extrapolates to understand role of microbial dysbiosis in pathophysiology of urolithiasis with special emphasis on oxalate degrading bacteria *Oxalobacter formigenes*.

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BOOK CHAPTERS

BIOIB-01
Industrial Production and Optimization of Microbial Enzymes

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Abstract

Microbial Enzymes: Roles and applications in industry" offers an essential update on the field of microbial biotechnology, and presents the latest information on a range of microbial enzymes such as fructosyltransferase, laccases, amylases, lipase, and cholesterol oxidase, as well as their potential applications in various industries. Production and optimisation technologies for several industrially relevant microbial enzymes are also addressed. In recent years, genetic engineering has opened up new possibilities for redesigning microbial enzymes that are useful in multiple industries, an aspect that the book explores. In addition, it demonstrates how some of the emerging issues in the fields of agriculture, environment and human health can be resolved with the aid of green technologies based on microbial enzymes. The topics covered here will not only provide a better understanding of the commercial applications of microbial enzymes, but also outline futuristic approaches to use microbial enzymes as driver of industrial sustainability. Lastly, the book is intended to provide readers with an overview of recent applications of microbial enzymes in various industrial sectors, and to pique researchers' interest in the development of novel microbial enzyme technologies to meet the changing needs of industry.

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Chapter 9 - Synthetic Gutomics: Deciphering the microbial code for futuristic diagnosis and personalized medicine

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Abstract

Microbes exist in every type of environment and the human gut is no exception. These microbes play a very crucial role in health and metabolism. Synthetic Gutomics is an effort to describe the engineering of the gut microbiota for ameliorating human disorders. This technology uses non-invasive treatment of diseases by improving a healthy microbial community in the gut. The gut microbiome contributes to the functioning of many human systems ranging from the immune system to the nervous system. With the advancement of technology, synthetic biology has played an important role in developing engineered organisms. In this chapter, we discuss the advancement in probiotics using synthetic biology as a tool and its future advancements. Various types of organisms and their interaction with the human gut are discussed. This is followed by examination of the influence of diet on the human gut microbiota and health. The emergence of probiotics is then discussed. The role of synthetic biology on probiotics is then evaluated, along with the species that are used in synthetic biology together with the therapies used. This is followed by the tools and techniques used in synthetic probiotics. Their application in human health is followed by a discussion of metabolic modelling of the human gut microbiome. Finally the limitations, opportunities and future implications of this technology are presented.

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BIOIB-03

Modified electrodes for sensing

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Book Chapter for the Book "Electrochemistry", *Volume 15*

Royal Society of Chemistry (Oct 2019)

Abstract

All electrochemical sensing techniques are based on electrochemical processes that occur at the electrode surface. Therefore, electrode surface modification plays a crucial role in electrochemical sensor development. Popular electrode surface modification techniques include physisorption, covalent modification and homogeneous multilayer thin film formation etc. The surface modified electrodes are termed as chemically modified electrodes (CMEs). CMEs exhibit, better over redox potentials, fast electron transfer kinetics, good electro-optical properties, and stable electrode surfaces in electro analysis. The present chapter summarizes the advantages, and disadvantages of various types of electrode modification techniques, characterizations of the modified electrode surface and applications in the field of electroanalysis.

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BIOIB-04
Exploration of Dill Seeds (*Anthem Graveolens*): an Ayurpharmacomic approach

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Book Chapter

Abstract

Since time immemorial, traditional medicine largely Ayurveda has established the usability and proficiency of many natural herbs and their formulations in curing ailments. However, Asian continent or to be specific, India could be considered as the "Land of Spices". The saga of food-spice recipes has been passed down to several generations with a motto to "Make Food as Medicine". One such exotic and extensively used herb is *Anethum graveolens* (Dill). This herb has potential towards various bioactivities. The whole plant is used as vrushya (natural aphrodisiac), the seeds are found to exhibit vataghna (balance vata) quenching excess free radicals, against vrana (non-healing wounds), shoola (abdominal colic pain), cures disorders and ulcers in eyes, plays a vital role in enema during panchakarma (bastikarma), functions as galactogogue, inhibits uterine fibroids, increases milk secretion during lactation and above all enhances the taste of the food. With this background, a major lacuna is with the understanding the functionality and mechanism of action at a molecular level. Hence, this chapter attempts to highlight the therapeutic potential of Dill seeds and their probable targets with modern knowledge and implications in pharmacology and clinical studies using ayurpharmacomic approach.

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DEPARTMENT OF COMMERCE AND MANAGEMENT
SCHOOL OF COMMERCE & MANAGEMENT

Publication Summary

International Journals	04	(CAMIJ-01-CAMIJ-04)
International Conferences	04	(CAMIC-01-CAMIC-04)

CAMIJ-01

Determination of Institutional Investment in Indian Stock Market: An Empirical Study

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Abstract

Stock market consists of a variety of investors. Among these, Foreign Institutional Investors (FIIs) and Domestic Institutional Investors (DIIs) are key parts of investment influx. This paper examines the factors influencing for foreign and domestic institutional investment in Indian stock market. The sample comprises of 42 quarterly observations on Institutional investment (FPIs and DIIs), market return represented by S&P Nifty and Macro economic variables such as Foreign Exchange Reserve (FER), 91 days Treasury bill rate in India (TBIND), Consumer Price Index (CPI), Wholesale Price Index (WPI) and Gross Domestic Product (GDP). The study employed Autoregressive Distributed Lag model (ARDL) to establish the co-integration with error correction models. The result indicates that there is long run relationship between the institutional investment among market return and macro-economic variable. Among this, market return plays a significant role to determine institutional investment in equity segment of Indian capital market. In addition, the study evidence that the trading pattern of both FPI and DIIs are dissimilar in the Indian stock market.

Keywords: FPI, DIIs, Market return, Macro-economic variables

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CAMIJ-02
Internal Auditing Practice of Kindo Koyisha Woreda Finance and Economic Development Bureau, Ethiopia

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Abstract

This study is conducted to assess the internal audit practice in Kindo Koyisha Woreda Finance and Economic Development Bureau, Ethiopia. Internal auditing is an indispensable tool of the organization to achieve its objective of profitability and to evaluate and enhance its risk management, control, and governance procedures. In the present study, researchers attempted to identify the strength and weaknesses of the internal auditing practice of the organization. To assess this study the researcher uses the descriptive type of the research design and regarding the data are would be collected from both primary and secondary sources. Regarding the sample size, the judgmental or purposive sampling techniques would be used. The total population of the study is 53 from these the researcher select only 20 employees of the organization by using the purposive or judgmental sampling techniques. The internal auditor of Kindo Koyisha Woreda Finance And Economic Development have low understandings of the audit procedure, detail accounting knowledge, and the employees of the organization did not understand the internal control of the organization. But the internal auditory of the organization has good work experience. Based on the above finding the researcher recommends the organization would have to hire CPA qualified auditors because they can match the audit activity with the current principle and standards and the organization to give periodic training for internal auditors about audit guidelines and principles by inviting high-level auditors.

Keywords: Internal Audit, Internal Control, Auditors, Fraud Detection, Accounting system.

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CAMIJ-03
Performance Evaluation of SBI Focused Equity Fund: An Empirical Study

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Abstract

Market soaring high and taking a dip is a part of investment journey. The investor participation in mutual fund industry taps the competition nerve and challenges the players to sustain the investor base. While the investment objectives of the investors are given due consideration by the fund managers, it is also complex to maintain the risk and return format. Hence, measuring the performance of the asset management companies enables us to understand the efficiency of the fund managers and performance of the fund. This paper investigates the performance of Focused Equity Fund in SBI Mutual Fund over a period of five years (1st April 2014 to 31st March 2019). To make comparison of fund return with market, CNX Nifty 500 is considered as benchmark index. The study employed various risk adjusted measures to check the fund is out performed or unperformed against the market.

Keywords: Mutual Fund, CNX Nifty 500, SBI, Return

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CAMIJ-04
An Analysis of Trading Behaviour of Foreign and Domestic Institutional Investors in the Indian Stock Market: An Empirical Study

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Abstract

India is an attractive investment destination for foreign portfolio investors in order to earn higher returns and risk diversification. FPI investments have predominantly been increasing in the Indian stock market since 1992. In the past two years, domestic institutions have been strong players in the Indian equity markets. The systematic monthly inflows into mutual funds have been impressive, and hence, they have a lot of surplus cash to accumulate some good-quality stocks. This buying by DIIs has saved the market from steep falls during the periods when FIIs resorted to basket-selling. Hence, investment patterns and the behaviour of FPIs and DIIs are dissimilar in the Indian stock market. There is a need to study the presence of feedback trading and causality between institutional investments (FPIs and DIIs) in the Indian stock market. To analyze this, the study took 2440 daily observations (short run) from April 1, 2007 to November 31, 2017 and 128 monthly observations (long run) from April 30, 2007 to November 30, 2017. The total reference period for this study is 10 years and 8 months. The study applied Granger causality test and vector autoregressive model to check the causality and presence of feedback trading between the institutional investments and Nifty returns. The study found that FPIs are positive feedback traders, while DIIs are negative feedback traders in the short run. However, the feedback trading does not exist in the long run. Also, the study proved the existence of bidirectional causality between the institutional investments and the Indian stock market in the short run.

Keywords: FPIs, DIIs, Nifty return, feedback trading, Granger causality, VAR model

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INTERNATIONAL CONFERENCES

CAMIC-01
Influence of Entrepreneurial Characteristics towards the Growth of Startups

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[1]Associate Professor, School of Commerce and Management Studies, Dayananda Sagar University, Bangalore, Karnataka.
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[3]Assistant Professor, School of Commerce and Management Studies, Dayananda Sagar University, Bangalore, Karnataka.

International Conference on Applied Research in Engineering and Management Science, 16th to 20th August 2019, Singapore, Amity University.

Abstract

India has the second largest startup ecosystem in the world and the growth rate is 10-12 percent has 20000 startups and on an average 3-4 startups born every day. The factors that make India appealing are cost of doing business, proximity and size of the domestic market. 55 percent of the college graduates prefer working in startups over corporates (Startup India, 2019). Bangalore, Mumbai and NCR top startup destinations with over 65 percent of the total Indian startups. Bangalore has also been listed within the worlds 20 leading startup cities in the 2015 (Startup Genome Project ranking). When talking about the growth of startup success the other end question is what factors influences and trigger the entrepreneurial success. Prevailing Entrepreneurial eco system is motivating to end up with startups or a personality trait of entrepreneur is the reason for entrepreneurial success. Extensive literature since 2000 highlights much about the personality traits. Hence, this study focus on the baseline personality traits like self-efficacy, innovativeness, locus of control, risk attitude and the need for achievement and also analyze to what extent each characteristic is contributing towards entry into entrepreneurship, performance outcomes. The data were obtained from 98 startups which includes business startups, technology based startups, social startups lifestyle startups, small and medium scale startups in Bangalore city by using survey based method. The study has taken necessary analysis to meet the objectives.
Keywords: Entrepreneur; startup; personality traits; self-efficacy; innovativeness; locus of control; need for achievement risk attitudes; success; goals; demographics; skills.

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CAMIC-02
An extension of expectation confirmation model (ECM) to study continuance behaviour in using e-Health services

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International Conference on Inclusive work Organization's needs, trends and possibilities, at The International Centre, Dec 11-13 2019, Goa, Organized by Sona School of Management

Abstract

In today's developing world, under the umbrella of electronic health services, mobile health services has become one of the significant initiative in healthcare sector. For the past decade, in developing countries like India, there seems to have an enormous growth in providing healthcare services through mobiles (m-health services). Regardless of extensive acceptance of smartphones, the debated subject in marketing literature is m-health services acceptance that remains challenging. Though research from the perspective of physicians are existing, there seems to be vivid gap focusing on the patients' perspective, in specific to elderly's intention towards continuance usage of m-health services. With the background of Technology Acceptance Model and Expectation-Confirmation Model, this study aims to examine the factors influencing the Gen X to use the m-health services. Empirical data were collected from 273 participants between the age 40 and 54. To analyze the data, PLS based SEM modeling was used. The results were drawn and practical implementations were discussed.

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CAMIC-03
Performance Evaluation of SBI Focused Equity Fund: An Empirical Study
Sathish[1], Janani[2] & Chandrakala[3]

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International Conference on Business Research, 17th to 18th Dec 2019, Chennai, Organized by Faculty of Science and Humanities, SRM University

Abstract

Market soaring high and taking a dip is a part of investment journey. The investor participation in mutual fund industry taps the competition nerve and challenges the players to sustain the investor base. While the investment objectives of the investors are given due consideration by the fund managers, it is also complex to maintain the risk and return format. Hence, measuring the performance of the asset management companies enables us to understand the efficiency of the fund managers and performance of the fund. This paper investigates the performance of Focused Equity Fund in SBI Mutual Fund over a period of five years (1st April 2014 to 31st March 2019). To make comparison of fund return with market, CNX Nifty 500 is considered as benchmark index. The study employed various risk adjusted measures to check the fund is out performed or unperformed against the market.
Keywords: Mutual Fund, CNX Nifty 500, SBI, Return

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CAMIC-04
Perception of First Year Students Towards Career Aspirations

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Abstract

The progressive growth of a country is built on the development of various facets in a developing nation like India which includes technological advancement, the economic development, the social development and the human development. Each of these developments in a nation largely depends on the development of the humans of the society who play a major role in the contribution. 'Human beings' as the term refers to the living being of the earth who majorly contributes in the overall progress of the society they live. India, being a democratic country and the second largest in terms of population has large number of youth population that focuses and contributes directly towards the development process of a nation. "Young people are the innovators, creators, builders and leaders of the future and they can transform the future only if they have skills, health, decision-making and real choices in life. As India is a nation with the Youngest Population, their choice of career plays a major role in the overall nation building and development. Based on these ideas, the topic was chosen with the in depth understanding about how these students perceive their career aspiration and the factors that are instrumental in the choices they make.

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DEPARTMENT OF MANAGEMENT STUDIES (MBA)
SCHOOL OF COMMERCE & MANAGEMENT

Publication Summary

International Journals	**10**	**(MGSIJ-01 - MGSIJ-10)**
National Journals	**02**	**(MGSNJ-01-MGSNJ-02)**
International Conferences	**05**	**(MGSIC-01–MGSIC-05)**
National Conference	**01**	**(MGSNC-01)**

MGSIJ-01

A Systematic Analysis on Central Bank Equity in India
Un análisis sistemático sobre la equidad del banco central en India

VENKATAMUNI, Reddy R[1], SUBRAHMANYAM, N[2], **A NAGARAJ, Subbarao A**[3,]
NAGENDRA S.[4]
[1]Professor, Department of Commerce, Manipal Academy of Higher Education (MAHE),
Manipal, Karnataka, India;
[2]Professor, School of Management, K L University, Vijayawada, Andhra Pradesh;
**[3]Dean – Executive Education and Professor – SCMS, Dayananda Sagar University,
Bangalore, India;**
[4]Alvas Institute of Engineering and Technology, Mijar-Moodbidri, Karnataka, India.

Abstract
This study aims at finding (a) the average capital-asset ratio of central banks globally is
6.56 percent while the number in emerging economies is 6.96 percent. (b)over one in
every seven central banks suffers operating losses in any given year with the average loss
being 50 percent of core capital; and (c)our Value-at-Risk estimates for the RBI excluding
exchange rate risk indicate that the current level of the core capital of the RBI at 6.6
percent is too low.
Keywords: Capital-Asset Ratio, Average Loss, Exchange Rate Risk, Value-at-Risk, Capital

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MGSIJ-02

The New Paradigm of Supply Chain Performance: Orchestrated Structure

A.NagarajSubbarao[#1], Pierre Al-Khoury[*2], Mansour Al-Shamali[#3]
[#1]Dayananda Sagar University, DSU, India;
[2]Lebanese German University, LGU;
[3]Public Authority for Applied Education and Training, PAAET, Kuwait.

Abstract

Supply chain management (SCM) is crucial for increasing organizational effectiveness, enhancing competitiveness, customer service and profitability. We live in changing times and disruptive technologies threaten the very survival of organizations like never before. This paper looks at organization design from the view-point of organization structure, in determining how organizations may structure themselves in dealing effectively with a complex world. The article specifically looks at ambidextrous organizations as a possible solution to dealing with ambiguity and disruption. Ambidextrous organizations are new age enterprises that are an exciting blend of cross-functional teams and strategic free units that operate on frontier technologies, that do not lose out on either economies of scale or experience that large organizations acquire over time and at a substantive cost. For organizations to be free in a controlled manner is the ethos of this article. The proposed performance measures intend to evaluate the practices influence on operational, economic and environmental supply chains performance.

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MGSIJ-03

An Empirical Research on with Bit Coin Purchase Intentions of Lebanon Citizens and Its Effects on Supply Chain Strategy

Mansour Al Shamali#[1] , Pierre Al-Khoury*[2], **A. Nagaraj Subbarao#[3]**
[1]PAAET, Kuwait;
[2]Lebanese German University, Lebanon;
[3]Dayananda Sagar University, Bengaluru, India.

Abstract

Nowadays, almost everybody has overheard about the digital currency named Bit coin and its worth has risen steeply. Even extra deeply, Bit coin currency with its central block cable technology has to be managed for pushing a decentralized change around the ecosphere. Intentions of this study are to empirically highlight the features that are associated with the purchase behavior of an individual. Digital signs deliver the resolution, but instead of these the key benefits are misplaced if a right-hand or a trusted another party is obligatory to stop dual expenditure. Bit Coin™ attraction has arranged key administration ladders towards a new group of operators. Data (almost 400 Respondents) for this study has been collected form the citizens of Lebanon of multiple cities. For the data analysis the proposed hypothesis has been tested through SPSS process method. Finally this study is concluded with discussion as well limitations and future research indications.

Keywords-Bit coin, Economy, Block-chain, Supply chain strategy.

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MGSIJ-04

Exploring the Antecedents of Capability, Motivation and Opportunity in HR Analytic Competency

Gayathri, R[1] and Asha Nadig[2]
[1]Research Scholar, Dayananda Sagar University, Bengaluru
[2]Professor, Dayananda Sagar University, Bengaluru

Abstract

Research Background: Human Resource analytics (HRA) commonly known as talent/workforce/people analytics is a data-driven discipline in Human Resource Management (HRM). In this domain HR analysts with various competencies such as analytical skill, business acumen, etc. are responsible for collecting and processing of data to enable the cost effective decision-making process. The capability, motivation and opportunity-enhancing HRM practices have given positive directions to various organizational outcomes. This article attempts to explore the antecedents of capability, opportunity and motivation components required for the competency of HR analysts.

Methodology: In this study, the framed hypothesis tests the influence of capability, opportunity and motivation in HR analytic competency. A well-structured questionnaire was used to collect the data from 230 HR analytics professionals working in different organization within the limits of Bangalore city, India. The mean score, MANOVA analysis and Friedman rank test were performed to statistically analyze the data.

Major findings and conclusion: A positive and significant relation was found between the capability, opportunity and motivation, and HR analytic competency. Our study suggests that antecedents of HR capability (behaviour), motivation (job satisfaction) and opportunity (cross-functional dynamics) affects the HR analytics competency in terms of understanding of data and both analytical and interpretation skill. Our study emphasizes on establishment of the capability, opportunity and motivation-based HR practices to improve the competency of HR professionals.

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MGSIJ-05

Information Technology Deployment Model: A Tool for Business Sustainability in Power Generation Sector

Padmalatha N A[1]

[1]Assistant Professor, School of Commerce and Management Studies,
Dayananda Sagar University

Abstract

Business Sustainability seeks to create a long-term stakeholder value by capturing the opportunities and managing the challenges. Business sustainability can be achieved through business strategy, operations management, environmental management, accounting and finance, organizational behaviour, etc. But in case of Power generating companies, sustainability can be achieved through traditional practices that are widely applied, along with the knowledge of innovative and advanced practices in information and communication technology (ICT). There are different ways to decide on the deployment of Information Technology (IT) in a Power Generation organization, when it comes to make a decision based on the likely impact of the investment on the performance of the enterprise. IT deployment Model intends to address the following questions: Deployment Strategy which indicates the IT systems that should be deployed for achieving the business objectives. Deployment Approach is about the coverage, processes and approach for deployment and Deployment Phasing which indicates when the IT systems should be deployed. The model is formulated by using the strategic requirements of Power generation companies, operational requirements, the strategic and operational challenges facing the Power generation companies. While developing the models for deployment of IT systems for power generation sector, the researcher has used the finding of the data from a state owned Power Generation sector to draw up the possibilities in the operational excellence area. The possibilities on the strategic excellence area are based more on the analysis of the structure of Indian Power Sector and study of the relevant literature. For the sake of bringing in clarity into the possible deployment models for the IT systems in a Power Generation Company, the possibilities of strategic and operational excellence are mapped into four quadrants. The four quadrants are Strategic alignment, Planning, Measurement and Analysis, Performance Improvement in Business Effectiveness and Operations and IT systems.

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MGSIJ-06

Consumer Preference for Adopting Online Payment Methods -The Influencing Role of Consumer Trust, Self-efficacy and Satisfaction among Urban Indian Adults in Bengaluru

G. Anupama [1]

[1]Asst.Professor, Dept.of MBA, SCMS, Dayananda Sagar University

Abstract

The Indian banking sector has made it possible to financially include a substantial portion of the national population to open bank accounts. The extremely high rates of mobile phone ownership among the Indian population enables the digital payments platform to forecast a huge demand potential for online transactions. However, the contemporary challenges faced by the Indian payments platform service providers are about understanding the important factors that affect consumer adoption of online payment methods. The present study is part of a descriptive study focusing on understanding the influence of consumer trust, self-efficacy and consumer satisfaction among urban Indian adults towards adopting online payment methods. Consumer trust, self-efficacy and consumer satisfaction have been found to influence the consumer preference for adopting online payment methods, although the influences are not of equal magnitude. The study contributes in providing important insights about the importance that urban Indian adults in a cosmopolitan city like Bengaluru gives to factors like trust, self-efficacy perceived and satisfaction felt when adopting digital payment methods through mobile banking. Descriptive research design using convenience sampling with structured questionnaire for surveying respondents has been utilized for the study. The results of the study provide important insights that online payment platform players and service providers can consider for developing effective marketing strategies to encourage greater adoption of online payment modes among the urban Indian adults in Bengaluru, an important cosmopolitan city in the emerging market economy of the world.

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MGSIJ-07

HR Analytics Competencies and Business Outcomes- the Mediating Effects of Motivation

Gayathri.R[1]
[1]Research Scholar, Dayananda Sagar University

Abstract

HR analytics has gained immense popularity among the consultants and practitioners in the field of HR management. However, it has not been subjected to scrutiny by academic researchers. The present study, therefore, investigates the role played by HR analytic competencies in improving Business outcomes and how this relationship is mediated by employee motivation. A descriptive design was adopted and data was collected from HR employees from Bangalore, who adopt analytics for various HR processes. The results showed that motivation partially mediated the effects of HR analytic competencies on Business outcomes. The analytical skills of employees which involves understanding, analyzing and interpreting data has a significant impact on the business outcomes of the organization in terms of improved decision-making and return on investment achieved. Further, motivating employees at work to generate and experiment with new ideas; to customize new ways to deliver products and services by analyzing data; to adopt and use creative analytics in any process; and to find satisfaction at work can further enhance the effectiveness of analytical skills on business outcomes. Based on these results, the study emphasizes the need for developing analytical skills among HR employees and motivating them to increase business outcomes.

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MGSIJ-08

Exploring the Factors of HR Analytics Competencies and its Impact on Business Outcomes

Gayathri.R [1], Revathy Shivashankaran[2]
[1]Research Scholar, Dayananda Sagar University
[2]Assistant Professor, Dayananda Sagar University

Abstract

Research Background: In the past few decades the Human Resource Management (HRM) practices have tremendously evolved and with technological development came the innovative data-driven approach largely known as HR analytics. HR analytics applies various statistical tools on the collected data to create interventions, propose strategies and assess their effectiveness in the organizational performance of various departments such as marketing, finance, etc. Though the HR analytics is not less known but has been remained relatively less explored. This article attempts to explore the factors of HR analytics competency and its impact on business outcome.

Methodology: The hypothesis was framed to test the influence of data-based HRA competencies in different processes in the organization and the business outcome. A well-structured questionnaire was used to collect the data from HR analytics professionals (n=180) working in the Bangalore city, India. The mean score, Pearson correlation and MANOVA analysis were performed.

Major findings and conclusion: The study revealed a strong, positive and significant correlation between the sub factors of HR capability, motivation and opportunity. Our study suggests that HR capability and level of opportunities can affect the HR analytics competency outcome like process performance and strategies. Further, the results support the positive impact of HR analytics competencies on business outcome involving Return on Investments (ROI) and decision-making process. Our study emphasizes on the implementation of effective HR analytics.

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MGSIJ-09

E-Commerce Frauds and the role of fraud Detection Tools in managing the risks associated with the frauds

Padmalatha N.A[1]

[1]Asst.Professor, Dept.of MBA, SCMS, Dayananda Sagar University

Abstract

Driven by multiple drivers, a traditionally cash based society of India is adopting digital payments at an unprecedented speed and scale. This rapid adoption has in its wake, lead to increase in the types and scale of frauds. While building business around the digital technology, companies need to proactively address the need for identification and prevention of frauds. Given the scale of transactions and the sped at which transactions get completed, mere human intervention will be futile in overcoming the looming threats of frauds. The desired objective can only be achieved by deployment of the right tools for fraud identification and tools. Formulating the right processes, specific to the sector or nature of business operations, identification of the right tool for the purpose and taking advantage of technological developments like in memory computing, collaboration across businesses, big data analysis, machine learning etc., are the key factors to consider while formulating effective fraud detection/prevention strategies. Current fraud detection techniques, however, are far from accurate, can result in significant financial loses, inconvenience and dissatisfaction to customers. In this article an attempt has been made to find the technologies to address the fraud and steps of adopting the fraud detection and prevention technology. The objectives of the research paper are to find types of e-Commerce frauds and to develop the mechanism (process) and technologies used in detection and prevention of frauds in consumer transaction.

Keywords: Fraud detection Technology, Online business, Ecommerce

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MGSIJ-10

Influence of Schadenfreude & Trust among Indians for Digital Banking Products

Anupama G[1]

[1]Asst.Registrar (Research Cell) & Asst.Professor (Dept.of MBA-SCMS), Dayananda Sagar University

Abstract

The paper explores the use of Information, Communication & Technology (ICT) to leverage use of digital platforms in the backdrop of social, mobile, analytics and cloud developments (SMAC) to perform banking and financial transactions that is heralding the growth of adoption of digital banking initiatives in an inclusive manner across the Indian market fraught with volatility, uncertainty, complexities of operations and processes and uncertainty of environmental factors (VUCA). Descriptive research design for surveying respondents has been utilized for the study and the empirical results of the study highlights the factors that influence the use of digital banking products among Indians. Three distinctive factors and segments of banking customers are identified basis the influence of schadenfreude on digital banking products usage. The study contributes in providing the framework for a theoretical model depicting the relationship of schadenfreude, demographic factors and other influences among Indians for digital banking customers.

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NATIONAL JOURNAL PUBLICATIONS

MGSNJ-01

Exploring the Transformation from Traditional to Contemporary Practices of Human Resource Management in Organizations

Gayathri.R[1]

[1]Dayananda Sagar University

Abstract

"Tap the untapped area, yes we spell it right HR Analytics". The involvement of the Human Resources (HR) field, historically, has been principally in personnel management, where the activities were typically administrative. However, the field has evolved from this limited outlook to include a greater emphasis on compliance that keeps abreast of legislative changes (Vargas, 2015). Nevertheless, there is evidence that HR professionals continue to be engaged with the traditional practices of management of human resources and fostering organisational and employee associations (Sullivan, 2013), instead of placing emphasis on partnering strategically in the functioning of the organisation (Mitsakis, 2014). Moreover, decision-making in the area of HR is a matter of significance to organisations as is the need for a robust link between HR and other areas of the organisation. Accordingly, in an endeavour to support the HR profession by providing tools to enhance both decision-making and organisational associations, there has been considerable research to evaluate the performance and worth of HR activities. This has frequently entailed the usage of numerical models (Becker, 1964; Becker, Huselid& Ulrich, 2001; Fiocco, 2017; Fitz-Enz, 1984; Toulson & Dewe, 2004). Indeed, it appears that the functions of the HR profession are experiencing mounting pressure to prove their usefulness to the organisation (Holbeche, 2009). This need has translated into a novel notion or subject which characterises one of the principal movements of the present day with regard to decision-making and strategy from a HR perspective (Falletta, 2014; Marler & Boudreau, 2017), that is, the notion of HR Analytics (HRA).

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MGSNJ-02

HR Challenges in Mergers and Acquisitions-A Case of Banks

Asha Nadig[1] and Viswanathan T[2]

[1]Dayananda Sagar University

[2]Symbiosis Institute of Business Management

A Case Book brought out by NHRDN, Ranchi and SAIL

Abstract

Consolidation of business entities is a world-wide phenomenon. One of the tools for consolidation is Mergers and Acquisitions (M&A). The quest for growth and the ever-changing dynamic business environment makes M&A a frequent phenomenon in corporate circles. A merger is a tool used by companies for the purpose of expanding their operations often aimed as an avenue for growth and advancement of business operations. M&A help firms get competitive advantage that gives them an opportunity to integrate new technologies, bring in new talent, develop competencies and reach bigger heights. The M&A in the financial sector are driven with the objective of leveraging the synergies expected to arise out of the consolidation. This case is about the merger in banking industry that brought together two strong industry players to form one robust and fundamentally sound bank in 2014.

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INTERNATIONAL CONFERENCES

MGSIC-01

An Empirical Study of Initial Public Offerings in the Indian Capital Market

Asha Nadig[1]
[1]Professor, Dept.of MBA, SCMS, Dayananda Sagar University

Management Conclave, Nov 2019, Mittal School of Business, Lovely Professional University and Curtin University, Australia

Abstract

Firms finance their businesses from various sources and Initial Public Offering (IPO) is one such way through which they obtain their finances. IPO is the initial sale of a firm's equity shares to stockholders on a public stock exchange and it is also known as unseasoned equity. In the context of Indian capital market, IPOs are the most predominant way to raise finance for the firms. IPO pricing is a puzzling phenomenon in finance. Most companies are confused as to the price at which the IPO should be offered to the investing public.

The study examines the initial performance of the Indian IPOs listed on Bombay Stock Exchange (BSE). 84 IPOs that were offered in the primary capital market in the period May 2014 and July 2019 are considered in this study. Of the stocks listed in BSE, 72 (77%) were underpriced, 20 (21%) were overpriced and 2 (2%) were rightly priced. Multiple linear regressions are used to study the relationship between various independent variables, like, size of the issue, age of the company, demand multiple, underwriters' reputation, market conditions and listing with the dependent variable, degree of underpricing.

The results of the data set analysis suggest that age of the company and the number of times the issue is oversubscribed are the significant variables contributing to underpricing. However, variables like, size of the offer, underwriters' reputation and market conditions during the issue are not important variables for IPO underpricing.

Keywords: IPOs, initial returns, determinants of underpricing, asymmetric information, underpricing, overpricing

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MGSIC-02

A Study on Trends in Personal Income Tax under Sec 80CCF

Asha Nadig[1]
[1]Professor, Dept.of MBA, SCMS, Dayananda Sagar University

7th PAN IIM World Management Conference, Dec 2019, IIM Rohtak

Abstract

Personal income tax revenue is one of the important sources of revenues for the nations. The salaried employees constitute a sizable class of taxpayers contributing to the public exchequer. Tax Planning is a broad term which requires management of affairs in a way that results in reduction of tax liability. This study looks at the awareness of the salaried class on various tax planning measures, Sec 80CCF in particular, available under the Income Tax Act and the tax planning measures adopted by the salaried class. The findings of the study indicate that the awareness levels of Sec 80C is very high and all salaried class people are availing the benefits under this section. However, Sec 80CCF is not popular amongst the people. Some reasons for this are the long time nature of the instrument, a minimum tenure of 10 years with lock-in period of 5 years. This section will become more acceptable if there a few corrections done by which the tenure and the lock in period are brought down.

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MGSIC-03

Transformational Strategies for Business Sustainability

Padmalatha N A[1]
[1]Asst.Professor, Dept.of MBA, SCMS, Dayananda Sagar University

ICTSBS, Oct 2019, CHRIST (Deemed to be University), Bangalore

Abstract

Business Sustainability seeks to create a long-term stakeholder value by capturing the opportunities and managing the challenges. Business sustainability can be achieved through business strategy, operations management, environmental management, accounting and finance, organizational behaviour, etc. But in case of Power generating companies, sustainability can be achieved through traditional practices that are widely applied, along with the knowledge of innovative and advanced practices in information and communication technology (ICT). There are different ways to decide on the deployment of Information Technology (IT) in a Power Generation organization, when it comes to make a decision based on the likely impact of the investment on the performance of the enterprise.

IT deployment Model intends to address the following questions: Deployment Strategy which indicates the IT systems that should be deployed for achieving the business objectives. Deployment Approach is about the coverage, processes and approach for deployment and Deployment Phasing which indicates when the IT systems should be deployed. The model is formulated by using the strategic requirements of Power generation companies, operational requirements, the strategic and operational challenges facing the Power generation companies. While developing the models for deployment of IT systems for power generation sector, the researcher has used the finding of the data from a state owned Power Generation sector to draw up the possibilities in the operational excellence area. The possibilities on the strategic excellence area are based more on the analysis of the structure of Indian Power Sector and study of the relevant literature.

For the sake of bringing n clarity into the possible deployment models for the IT systems in a Power Generation Company, the possibilities of strategic and operational excellence are mapped into four quadrants. The four quadrants are Strategic alignment, Planning, Measurement and Analysis, Performance Improvement in Business Effectiveness and Operations and IT systems.

At the national level, demand based power generation is the need of the future. For the achievement of the same it is essential for the Power Transmission grid to be balanced. The deployment model provides an overview of what IT investments have potential to impact what aspect of strategy of the organization. The focus can be either to achieve strategic excellence or operational excellence which are needed for business sustainability. Hence, the information technology deployment model developed in this study can be used effectively as a tool for the business sustainability in the Power Generation Sector.

Keywords: IT Deployment Model, Demand based Power Generation, IT Deployment Strategy, Deployment Phasing, IT deployment approach

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MGSIC-04

The Impact of HR Analytics Outcome on Business Outcomes – a Mediation Model

Gayathri. R[1]

[1]Dayananda Sagar University

Abstract

The role of Human Resources Management has evolved from being an administrative function towards being a more strategic partner. The most significant driving force behind this evolution is technological development. For instance, tools of data analytics, and other visualization techniques help management make informed decisions. Storing, processing and analyzing data form an integral part of HR management. This paper analyzes how the outcomes of using HR analytics in various processes and strategies can be used to bring about business outcomes like RoI and improved decision-making. A survey questionnaire was distributed among a sample of 180 HR professionals working in the city of Bangalore. The data collected was subjected to statistical analysis using SPSS v24. The results showed that the outcomes of using HR analytics to enhance process performance and strategy implementation can significantly improve Business Outcomes. Further, the Utilization of HR analytics outcomes was found to partially mediate the direct effects of HR analytics on Business Outcomes. It can be implied from the results that the effectiveness of HR analytics on decision-making and RoI can be enhanced by utilizing its outcomes on process performance and strategy implementation.

Keywords: HR analytics, competencies, utilization, business outcomes, decision-making, Return on Investments

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MGSIC-05

Exploring the Transformation from Traditional to Contemporary Practices of Human Resource Management in Organizations

Gayathri.R[1]

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9th International Conference at ABBS, Bangalore, 2019

ABSTRACT

 "Tap the untapped area, yes we spell it right HR Analytics". The involvement of the Human Resources (HR) field, historically, has been principally in personnel management, where the activities were typically administrative. However, the field has evolved from this limited outlook to include a greater emphasis on compliance that keeps abreast of legislative changes (Vargas, 2015). Nevertheless, there is evidence that HR professionals continue to be engaged with the traditional practices of management of human resources and fostering organisational and employee associations (Sullivan, 2013), instead of placing emphasis on partnering strategically in the functioning of the organisation (Mitsakis, 2014). Moreover, decision-making in the area of HR is a matter of significance to organisations as is the need for a robust link between HR and other areas of the organisation. Accordingly, in an endeavour to support the HR profession by providing tools to enhance both decision-making and organisational associations, there has been considerable research to evaluate the performance and worth of HR activities. This has frequently entailed the usage of numerical models (Becker, 1964; Becker, Huselid& Ulrich, 2001; Fiocco, 2017; Fitz-Enz, 1984; Toulson&Dewe, 2004). Indeed, it appears that the functions of the HR profession are experiencing mounting pressure to prove their usefulness to the organisation (Holbeche, 2009). This need has translated into a novel notion or subject which characterises one of the principal movements of the present day with regard to decision-making and strategy from a HR perspective (Falletta, 2014; Marler& Boudreau, 2017), that is, the notion of HR Analytics (HRA).

Keywords: Traditional, contemporary, HR, research

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NATIONAL CONFERENCE

MGSNC-01

HR Challenges in Mergers and Acquisitions-A Case of Banks

Asha Nadig[1] and Viswanathan T[2]

[1]Dayananda Sagar University

[2]Symbiosis Institute of Business Management

Case writing competition, organized by NHRDN, Ranchi and SAIL, Aug 2019

Abstract

The case discusses the merger of Kotak Mahindra Bank with ING Vysya Bank and post-merger challenges in general and human resources challenges in particular. Kotak Mahindra Bank was the first Non-Banking Company to get transformed into a bank in 2003. ING Vysya Bank was one of the oldest private sector banks, established in 1930. In November 2014, Kotak Mahindra had announced it was acquiring Bengaluru headquartered ING Vysya Bank. The deal implies a price of Rs 790 for each ING Vysya share, based on the average closing price of Kotak shares during the month to November 19, valuing the deal at about Rs 15,000 crore. These two banks differed in terms of business model, geographic presence, culture, work force, technology adoption and customer base. While ING Vysya had more than 10,000 employees, Kotak Bank had around 29,000 employees. The case deals with the strategic and human resources challenges that arise from the merger of two banks.

The case deals with human resource (HR) issues in the merger of Kotak Mahindra Bank (KMB) and ING Vysya Bank (IVB). The case discusses various aspects of the merger process and focuses on the key challenges that the banks faced while integrating the employees of the merged entities. The case also highlights the steps taken by KMB to ensure that the merger process is smooth and employees are adequately motivated.

Keywords: Mergers, Acquisitions, Human Resources, HR Issues, HR Challenges, Synergy

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DEPARTMENT OF CHEMISTRY
SCHOOL OF ENGINEERING
Publication Summary

International Journals	11	(CHIJ-01 – CHIJ-11)

CHIJ-01

Enhancement of cycling stability and capacity of lithium secondary battery by engineering highly porous AlV_3O_9

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Abstract

Nowadays, the development of nanostructures of oxide-based materials gained significant research interest owing to their new merits and avenues to design better electrodes for lithium-ion battery. It is well known that vanadium and vanadium-based oxide materials have high theoretical capacity but the practical applications are limited mainly due to the fast capacity fading, resulting from the structural collapse, upon cycling and poor electronic conductivity. In this paper, we demonstrate the fabrication of mesoporous vanadium-based oxide with nanostructures, which significantly improved the capacity fading upon cycling. A simple and generic synthetic protocol has been proposed to synthesize highly porous AlV_3O_9 using aluminum nitrate and ammonium vanadate with the assistance of sucrose. It is found that the decomposition of surface-adsorbed sucrose during the course of AlV_3O_9 preparation creates homogeneously distributed mesopores. The prepared porous AlV_3O_9 has been used to fabricate positive electrode for lithium rechargeable battery where high discharge capacity of 240 mAhg^{-1} was achieved at 0.2 C rate, which is comparable to the best reported results of vanadium-based positive electrodes. The characteristic features are 240 mAhg^{-1} capacity and $\sim 100\%$ columbic efficiency, demonstrating porous AlV_3O_9 as a promising cathode material for high-power batteries.

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An introduction of new nanostructured $Zn_{0.29}V_2O_5$ cathode material for lithium ion battery: a detailed studies on synthesis, characterization and lithium uptake

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Abstract

The present work demonstrates the introduction of zinc and vanadium based new and novel cathode material for lithium ion secondary battery. Herein, the newly identified $Zn_{0.29}V_2O_5$ was synthesized by sucrose assisted nitrate decomposition technique where the carbonization and generation of the enormous amount of heat and gaseous products, during the course of preparation, leads to the formation of unique layered mesoporous $Zn_{0.29}V_2O_5$ nanostructures with high purity in a short period. Due to the synergetic effect of nano-engineering and addition of Zn^{2+} into V_2O_5 together with mesopores, the nanostructured $Zn_{0.29}V_2O_5$ delivers high discharge capacity of 460 mAhg^{-1} after 100 cycles at 0.1 C. Further, the result shows that the unique nanostructured $Zn_{0.29}V_2O_5$ not only favour charge and mass transfer but also effectively mitigates volume expansion and thereby exhibit high rate capability and long cycling performance.

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CHIJ-03
Studies on anion-induced structural transformations of iron(III) (Hydr)oxide micro-nanostructures and their oxygen evolution reaction performance

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Abstract
Herein, the fundamental studies on the influence of anions, NO_3^- and SO_4^{2-}, on the formation of nanostructured α-Fe_2O_3 and α-FeOOH has been reported. Interestingly, the nitrate (NO_3^-) endows the formation of α-Fe_2O_3 while sulphate (SO_4^{2-}) endows the formation of α-FeOOH. Thus, the prepared α-Fe_2O_3 and α-FeOOH were systematically characterized by using powder X-ray diffraction (XRD), scanning electron microscopy (SEM), energy-dispersive X-ray (EDX) and Fourier transform infrared spectroscopy (FT-IR). The SEM image reveals α-Fe_2O_3 and α-FeOOH were composed of microspheres and nanorods respectively. Further, the prepared α-Fe_2O_3 microspheres and α-FeOOH nanorods were used as potential electrocatalyst to catalyse oxygen evolution reaction (OER) where α-FeOOH nanorods were recognized as best OER catalyst with low overpotential of 333 mV at 10 mA cm^{-2} and stability over 20 h.

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CHIJ-04
Controlled synthesis of nickel sulfide polymorphs: studies on the effect of morphology and crystal structure on OER performance

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Abstract

Herein, the Taguchi L-9 orthogonal technique has been employed to design the optimised conditions (sulfur source, temperature, reaction time and surfactant) for the preparation of nickel sulfide polymorphs using hydrothermal method. The experimental results demonstrate the temperature dependant phase transition of $NiS \rightarrow Ni_3S_4 \rightarrow NiS_2$ and the prepared nickel sulfide polymorphs exhibit distinctive morphologies of sugar cubes, spherical apple, rose type, aggregated stones, and tubular bacteria type structures. The effect of morphology and crystalline structure on oxygen evolution reaction (OER) has been investigated for the first time where the OER performance follows the order: NiS NiS_2 Ni_3S_4. Among the various morphologies of NiS, and NiS_2, the order of OER performance is as follows: $NiS_{(sugar-cubes)}$ $NiS_{(agglomerated\ stone\ particles)}$ $NiS_{(apple\ shaped)}$ and $NiS_{2(aggregated\ stoneparticles)}$ $NiS_{2(rose\ type)}$ $NiS_{2(tubular\ bacteria)}$ shaped nanostructure.

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Rational design and synthesis of hetero-nanostructured electrospun PU@PANI@FeS₂: A surface tailored hybrid catalyst for H₂ production via electrochemical splitting of water

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Abstract

The rational design of potential and stable electro-catalyst, which yields high hydrogen evolution is most emerging research area and is of great challenge. In this work, we present a simple method for the fabrication of hybrid electrocatalyst, PU@PANI@FeS₂, composed of polyurethane (PU), polyaniline (PANI) and iron sulphide (FeS₂). Initially, The PU nanofibers of diameter of 200–300 nm were fabricated by electrospinning process. Then, FeS₂ together with PANI were deposited on electrospun PU nanofibers via simultaneous precipitation and polymerization. The prepared PU@PANI@FeS₂ was thoroughly characterized using X-ray diffraction (XRD), Fourier transform infra-red spectroscopy (FTIR) and scanning electron microscopy (SEM). The XRD results confirm the formation of pure FeS₂ on PU@PANI. The PU@PANI@FeS₂ was tested as an electrocatalyst to catalyse hydrogen evolution reaction (HER) and compared its electrochemical activity with NiS₂ and SnS₂ nanocomposites. The PU@PANI@FeS₂ exhibits enhanced HER activity, where it demonstrates low overpotential of 266 and 372 mV to generate 10 mA/cm² and 50 mA/cm², respectively. The excellent HER activity of PU@PANI@FeS₂ may be due to the cooperative effect of FeS₂ and PANI, where FeS₂ provides abundant active sites and PANI enhances the conductivity.

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Engineering the M*x*Zn₁₋*x*O (M = Al³⁺, Fe³⁺, Cr³⁺) nanoparticles for visible light-assisted catalytic mineralization of methylene blue dye using Taguchi design

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Abstract

Here, we developed a sustainable solution to address the water pollution especially due to organic dye industries. Visible light-activated catalytic degradation of aqueous solution of methylene blue (MB) dye was studied by using trivalent metal ion-doped ZnO nanoparticles as a photocatalyst. The nano-photocatalysts were synthesized by microwave-irradiated solution combustion method using D-glucose as a fuel. Various experimental parameters were optimized using Taguchi design of experiment, analysis of variance (ANOVA) and Grey relational analysis in order to obtain potential ZnO photocatalyst. Using ANOVA and Grey relation analysis, the optimum conditions were estimated that 5.5 mol% Cr³⁺-doped ZnO with 4 min MW heating and calcined at 450 °C, which shows very impressing photo-catalytic property. The ANOVA confirms that the calcination temperature and dopants significantly influence crystallite size with contribution factor of 42.28% and 40.02%, respectively. The band gap energy of the photocatalyst was largely influenced by a type of dopant with contribution 85.77%. Grey relational grading indicates that the 5.5% Al³⁺ doping, 4 min MW heat treatment, 450 °C calcination temperature to get lesser band gap (3.05 eV) and smaller crystallite size (46.96 nm). As compared with other L₉ orthogonal array, the degradation efficiency is found to be higher (89.31%) on the Grey theory predication result for MB dye. Herewith, we strongly confirm that the Taguchi design was an promising tool in engineering the ZnO photocatalyst with a very less experimental trials and cost saving approach.

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CHIJ-07
Synthesis of acid resistant $Fe_2V_4O_{13}$-polypyrrole nanocomposite: its application towards the fabrication of disposable electrochemical sensor for the detection of As(III)

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Abstract

The development of reliable and environmentally benign electrochemical sensor for the detection of carcinogenic As(III) is of great scientific and public interest. Herein, thin film of novel $Fe_2V_4O_{13}$-polypyrrole nanocomposite was prepared on the screen printed electrode (SPE) and thus the prepared nanocomposite modified SPE was successfully used as one shot disposable electrochemical sensor for the detection As(III). The proposed sensor has high sensitivity towards As(III), wherein it exhibits wide linear range, from 0 to 500 ppb, with the detection limit (LOD) of 0.3 ppb, which is well below the value prescribed by World Health Organization (WHO). Therefore, the proposed sensor could be used for the detection of As(III) present in real samples.

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CHIJ-08

MgFe$_2$O$_4$ nanoparticles synthesis and characterization: application to trace level mercury(II) measurement from waste water samples

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Abstract

The magnesium ferrite nanoparticles modified glassy carbon electrode has been fabricated and applied in the trace level quantification of Hg^{2+} by differential pulse stripping voltammetry technique. The MgFe$_2$O$_4$ particles were prepared by a simple nitrate-sucrose solution combustion synthetic route and characterized through XRD, FTIR, SEM, TEM, BET and XPS techniques. The MgFe$_2$O$_4$ modified glassy carbon electrode has been characterized voltammetrically using standard redox couple i.e. [Fe(CN)$_6$]$^{4/3-}$ along with electrochemical impedance spectroscopy (EIS). The experimental parameters such as nature of electrolyte, deposition potential and deposition time were optimized. The fabricated sensor showed excellent signal intensity and stability towards Hg^{2+} measurement at trace level. The sensor showed linearity in the concentration range 2–120 ppb with very low detection limit of 0.037 ppb.

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CHIJ-09
Naftopidil Molecular Salts with Improved Dissolution and Permeation

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Abstract

Naftopidil (NFPD) is a α1 adrenoceptor antagonist drug. Low solubility and low permeability is the major drawback of this drug. The synthesis of multicomponent crystalline forms of this amine functional group drug with carboxylic acid coformers, both achiral and chiral acids, provides solution to improve its solubility as well as permeability. Eight molecular salts were crystallized by liquid-assisted grinding followed by isothermal crystallization. Single crystal X-ray diffraction (SCXRD) analysis of the molecular salts showed that the structures are stabilized by strong N–H···O, O–H···O, and weak C–H···O hydrogen bonds in the solid-state. The bulk phase purity of new solid forms was confirmed by powder X-ray diffraction (PXRD) and the crystalline products were further characterized by infrared (IR) spectroscopy and thermal analytical techniques (DSC). The molecular salts exhibit superior dissolution rates compared to pure NFPD. However, during dissolution, NFPD showed decrease in concentration after 60 min for all salts due to precipitation. The supersaturation occurred due to salt disproportionation which generates insoluble NFPD, as confirmed by PXRD of the residue. The salts reach high saturation concentration before 60 min which is indicative of immediate release formulation to achieve fast onset of therapeutic activity. Moreover, the salts exhibit high saturation in PBS (phosphate buffer saline) media and improved permeability compared to the pure drug. Finally, NFPD-MLA (DL-malic acid racemate) shows enhanced dissolution and permeability compared to all other salts and pure NFPD.

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Detailed molecular structure (XRD), conformational search, spectroscopic characterization (IR, Raman, UV, fluorescence), quantum mechanical properties and bioactivity prediction of a pyrrole analogue

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Abstract

Pyrroles are an exciting class of organic compounds with immense medicinal activities. This manuscript presents the structural and quantum mechanical studies of 1-(2-aminophenyl) pyrrole using X-Ray diffraction and various spectroscopic methods like Infra-Red, Raman, Ultra-violet and Fluorescence spectroscopy and its comparison with theoretical simulations. The single-crystal X-ray diffraction values and optimized geometry parameters also were within the agreeable range. A fully relaxed potential energy scan revealed the stability of the possible conformers of this molecule. We present the density functional theory results and assignment of the vibrational modes in the infrared spectrum. The experimental and scaled simulated vibrations matched when density functional theory simulations (B3LYP functional with 6–311++G**). The electronic spectrum was simulated using time-dependent density functional theory with CAM-B3LYP functional in dimethylsulphoxide solvent. The fluorescence spectrum of the compound was studied at different excitation wavelengths in the dimethylsulphoxide solvent. The stability of the molecule by intramolecular electron transfer by hyperconjugation was studied with the natural bond orbital analysis. Frontier molecular orbitals and molecular electrostatic potentials of the compound gave an idea about the reactive behaviour of the compounds. Prediction of activity spectral studies followed by docking analysis indicated that the molecule is active against arylacetonitrilase inhibitor.

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CHIJ-11

Synthesis, Characterization, and Evaluation of Biological Activities of Imidazolyl-Isoxazoline Analogue

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Abstract

Synthesis of isoxazoline heterocycle containing benzimidazole moiety with the highest bioactivity using substituted benzaldehyde as starting material is reported in this paper. In the beginning, the precursor benzaldehydes were treated with hydroxylamine hydrochloride to afford respective aldoximes. The resultant compound was subjected to cyclization reaction with allyl chloride in the presence of chloramine-T to afford isoxazolinekey intermediate. Finally, benzimidazole was subjected to S-alkylation with isoxazoline moiety to afford the title compound with good yield. This method cultivated many advantages like, short reaction time and easy isolation. All the compounds structurally characterized by ^{1}H NMR, ^{13}C NMR, LCMS, IR spectral data, and elemental analysis.Besides,all the synthesized compounds were tested for the irantimicrobial and antioxidant activity. The bioactivity was envisioned that the compound 5a and 5f exhibited excellent antifungal activity, which may be helpful in developing a lead to inhibit microbes.

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DEPARTMENT OF MATHEMATICS
SCHOOL OF ENGINEERING

Publication Summary

International Journals	04	(MATIJ-01 – MATIJ-04)

MATIJ-01

Effects of Non-Uniform Salinity Gradients on the Onset of Double Diffusive Magneto – Marangoni Convection In A Composite Layer

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[2]Department of UG, PG Studies & Research in Mathematics, Government Science College Autonomous, Bengaluru.

Abstract

The onset of double diffusive magneto Marangoni convection in a two-layer system comprising an incompressible two component, electrically conducting fluid saturated porous layer over which lies a layer of the same fluid in the presence a vertical magnetic field has been studied analytically with respect to uniform and non-uniform salinity gradients. The upper boundary of the fluid layer is free and the lower boundary of the porous layer is rigid and both the boundaries are insulating to heat and mass. At the interface the velocity, shear stress, normal stress, heat, heat flux, mass and mass flux are assumed to be continuous conducive for Darcy-Brinkman model. The resulting Eigen value problem is solved by regular perturbation technique. The critical Rayleigh number, which is the criterion for stability of the system, are obtained for uniform and non-uniform salinity gradients. The effects of different physical parameters on the onset of double diffusive magneto-convection are investigated for all the gradients in detail.

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MATIJ-02
Non - Darcian Effects of Uniform and Non -Uniform Salinity Gradients on the Onset of Triple Diffusive Magneto Convection in Composite Layers

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[2]Assistant Professor, Department of Mathematics, Dayananda Sagar University SOE, Bengaluru.

Abstract

Non - Darcian and magnetic field effects of uniform and non -uniform salinity gradients on the onset of triple diffusive convection in a system of composite layers enclosing an incompressible, three component, electrically conducting fluid which lies above a saturated porous layer of the same fluid is studied analytically. The governing equations are solved by regular perturbation approach. The boundaries of the composite layers are considered to be rigid, insulating to heat and mass with magnetic field along vertical z – axis. At the interface, the velocity, shear stress, normal stress, heat, heat flux, mass and mass flux are presumed to be continuous, intended for Darcy-Brinkman model. The critical Rayleigh number which is the guiding principle for the stability of the system is accomplished for linear, parabolic and inverted salinity profiles. It is found that the magnetic field delays the triple diffusive magneto convection.

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MATIJ-03

The study of effects of surface tension, magnetic field and non-uniform salinity gradients on the onset of double diffusive convection in composite system

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Abstract

The effects of surface tension, magnetic field and basic non - uniform salinity gradients on the onset of double diffusive convection is studied analytically in composite system comprising an incompressible, two component, electrically conducting fluid lying above a saturated porous layer of the same fluid in the presence of vertical magnetic field imposed. The governing partial differential equations are solved by the method of regular perturbation. The upper boundary of the fluid layer is free and the lower boundary of the porous layer is rigid, insulated to heat and mass. The fluid flow in porous layer is governed by the Darcy-Brinkman equation. The critical Rayleigh number which exhibits the stability of the system is accomplished for piece wise linear salting below, desalting above and step function salinity gradients. We have figured out that by increasing Darcy number, due to the presence of magnetic field the convection is accelerated in all the three non - uniform salinity gradients considered.

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MATIJ-04

Effects of Heat Source / Sink and Non-uniform Temperature Gradients on Non-Darcian-Benard-Magneto-Marangoni Convection in an Infinite Horizontal Composite Layer

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Abstract

The physical configuration of the problem is a composite layer which is horizontally unbounded, in the presence of uniform heat source/sink in both the layers enclosed by adiabatic boundaries. The problem of Benard-Magneto-Marangoni convection is investigated on this composite layer for non-Darcian case and is subjected to uniform and non-uniform temperature gradients. The eigenvalue, thermal Marangoni number is obtained in the closed form for lower rigid and upper free with surface tension velocity boundary conditions. The influence of various parameters on the Marangoni number against thermal ratio is discussed. It is observed that the heat absorption in the fluid layer and the applied magnetic field play an important role in controlling Benard-Magneto-Marangoni convection. The parameters which direct this convection are determined and the effect of porous parameter is relatively interesting.

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DEPARTMENT OF PHYSICS
SCHOOL OF ENGINEERING
Publication Summary

International Journals	**05**	**(PHYIJ-01 – PHYIJ-05)**
International Conferences	**03**	**(PHYIC-01–PHYIC-03)**

PHYIJ-01

Density fluctuations And Single-Mode Thermal States In The FRW Universe

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Abstract

Using single-mode squeezed and coherent thermal states formalism, we analyzed the validity of the semi classical Einstein equation(SCEE) in the flat Friedmann–Robertson–Walker universe by analyzing the density fluctuations in terms of a massive inflaton. In a single-mode squeezed thermal states the density fluctuations are too large; consequently, the semi classical theory of gravity (SCTG) does not hold good, for squeezing parameter greater than unity, i.e.,rs 1; however, the theory is valid when this related squeezing parameter is smaller than the unity,i.e.,rs 1 and rs 1. Also, it is noted that the SCEE is dependable on coherent thermal state formalism. The current study provides a description of the density fluctuations as a result of the quantum and thermal effects in the SCTG.

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PHYIJ-02
Optical and Conductivity Studies of Cr3þ Doped Polyvinyl Pyrrolidone Polymer Electrolytes

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Abstract

Polymer electrolyte films of polyvinyl pyrrolidone (PVP) embedded with various concentrations of Cr3þ ions were prepared by a solution casting technique. The complexation between the Cr3þ ions and the polymer was confirmed by Fourier transform infrared (FTIR) spectroscopy and UV–vis spectroscopy. The electrical conductivity of the films was measured using an impedence analyzer in the frequency range of 42Hz to 5MHz at ambient temperature. It was observed that the conductivity increased with the increase in the Cr3þ ion concentration. UV–visible absorption spectra in the wavelength range of 200–800nm were used to determine the direct and indirect optical energy band gaps and optical absorption edge. Both of the optical band gaps decreased with the increase in Cr3þ ion concentration. FTIR studies on pure and Cr3þ doped PVP polymer films revealed the vibrational changes that occurred due to the effect of the dopant Cr3þ ions in the polymer. Our results suggested that Cr3þ, as a dopant, is a good choice to improve the electrical properties of PVP polymer electrolytes.

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Optical Properties of TSP: NaNO3 Biopolymer Electrolyte

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Abstract

Solid biopolymer electrolyte (SPE) film based on biopolymer Tamarind Seed Polysaccharide (TSP) doped with sodium nitrate (NaNO3) is developed by solution cast technique. The optical properties have been carried out by UV-visible optical Absorption spectroscopy in the wavelength range of 200-800 nm. From this, the optical absorption, optical transmission, optical absorption coefficient, refractive index spectra, extinction coefficient spectra, direct energy band gap, indirect energy band gap, optical absorption edge, estimated band gap studies are obtained.

 The transmittance wavelength is approximately 200nm. The calculated optical band gap changes from 5.01eV to 4.65eV. The optical bandgap indicated that the films are nearly transmitting within the visible range. The direct, indirect and absorption edge for pure TSP is high and by increasing salt concentration of NaNO3, the above parameters are observed to decrease gradually. For the concentration of 70% TSP: 30% NaNO3 low value of direct and indirect energy bandgap is obtained.

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PHYIJ-04
Effect of Doping Nano Samarium (III) Oxide in PVA+Na3C6H5O7 Films for Battery Applications

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Abstract

The effect of doping nano Sm_2O_3 particles in PVA + $Na_3C_6H_5O_7$ (90:10% w/w) polymer composite films on the structural, thermal, electrical properties and battery parameters are investigated. The PVA + $Na_3C_6H_5O_7$ + nano Sm_2O_3 (90:10:1- 4% w/w) films were synthesized and characterized. A 2% w/w Sm_2O_3 film was relatively homogeneous with high amorphous in nature enabled the movement of nanoparticles in the matrix of polymer under potential gradient. The maximum conductivity was 2.09×10^{-3} S cm-1 for 2% w/w nano Sm_2O_3 film and it is 7 orders more than polyvinyl alcohol. The films were adopted in batteries with configuration: Anode (Mg+MgSO4) /[{PVA:$Na_3C_6H_5O_7$ (90:10% w/w)} + nano Sm_2O_3 (1-4% w/w)]/cathode (iodine + carbon + pieces of electrolyte) and battery parameters were assessed. The discharge time is 174 h with the cell having 2.0% w/w nano Sm_2O_3 film. These nano Sm_2O_3 doped films are successfully adopted in the fabrication of batteries and also the proposed cells are simple, effective, eco-friendly and economical.

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PHYIJ-05

Reducing graphene oxide using hydroiodic acid fumes and low temperature annealing for enhanced electrical conductivity

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Abstract

In this work, a novel hybrid technique for reduction of graphene oxide is explored. The hybrid technique involves chemical reduction of graphene oxide coated over oxidized silicon substrate, by minimal exposure to HI acid fumes followed by low temperature thermal annealing under vacuum environment. Observations have shown improved conductivity as compared to other hybrid techniques and low temperature thermal annealing technique.

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INTERNATIONAL CONFERENCE PUBLICATIONS

PHYIC-01
Optical Properties of TSP: NaNO3 Biopolymer Electrolyte

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Abstract

Solid biopolymer electrolyte (SPE) film based on biopolymer Tamarind Seed Polysaccharide (TSP) doped with sodium nitrate (NaNO3) is developed by solution cast technique. The optical properties have been carried out by UV-visible optical Absorption spectroscopy in the wavelength range of 200-800 nm. From this, the optical absorption, optical transmission, optical absorption coefficient, refractive index spectra, extinction coefficient spectra, direct energy band gap, indirect energy band gap, optical absorption edge, estimated band gap studies are obtained.

The transmittance wavelength is approximately 200nm. The calculated optical band gap changes from 5.01eV to 4.65eV. The optical band gap indicated that the films are nearly transmitting within the visible range. The direct, indirect and absorption edge for pure TSP is high and by increasing salt concentration of NaNO3, the above parameters are observed to decrease gradually. For the concentration of 70% TSP: 30% NaNO3 low value of direct and indirect energy band gap is obtained.

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PHYIC-02
Investigations on HI Reduced Graphene Based FET for Photon Detection

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2019 IEEE Photonics Conference (IPC) (IEEE Xplore)

Abstract

Reduced graphene oxide-based field effect transistor is fabricated and tested for detection of UV photons in 100-280 nm range. A novel technique is used for reduction of Graphene oxide. The fabricated device showed promising response to UV photons in terms of resistance change in rGO.

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PHYIC-03
Effect of sensing layer thickness on the performance of a reduced Graphene oxide based Photon detector

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2019 Workshop on Recent Advances in Photonics (WRAP)
Publisher: IEEE
DOI: 10.1109/WRAP47485.2019.9013725

Abstract

Reduced graphene oxide based Field Effect Transistors are fabricated and tested for photon detection in the wavelength range of 100-280 nm. The paper reports a study to analyze the effect of reduced graphene oxide layer thickness on the performance of the detector. Also, the detector showed deteriorated performance after one month of fabrication, a portion of which could be restored by low temperature vacuum annealing.

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DEPARTMENT OF AEROSPACE ENGINEERING
SCHOOL OF ENGINEERING

Publication Summary

International Journal	01	(ASEIJ-01)
International Conferences	02	(ASEIC-01- ASEIC-02)

ASEIJ-01

Passive Control of Transonic Flow over a Blunt Body Using Aerospikes

Gireesh Yanamashetti[1], D. B. Singh[1], **G K Suryanarayana**[2] and Rinku Mukherjee[3]
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Abstract

Blunt nose cones used in launch vehicles can excite buffet due to shock oscillations over the payload fairing on the leeward side at transonic Machnumbers and small angles of attack.Wind-tunnel tests show that the overall aerodynamic characteristics, such as the pitching moment and location of the center of pressure, experience sudden jumps at these conditions. Thus, the longitudinal stability and controllability of a launch vehicle, as well as unsteady loading on the payload fairing, can be affected. The cause of these oscillations is found to be interactions between the stream wise flow and reverse flow induced by a pair of counter-rotating vortices over the payload fairing. An aerospike was found to prevent the formation of counter-rotating vortices, shock oscillations, as well as jumps in overall aerodynamic characteristics, with no significant changes in the drag coefficient. The observations are supported by high-speed shadowgraphs and surface-flow visualizations. Computational fluid dynamics studies suggest that the shear layer from the tip of the aerospike envelops significant region of the heat shielding reverse flow due to the formation of a separation bubble. Mean-flow models of the topologies of the flow field for the model without and with aerospike are proposed.

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INTERNATIONAL CONFERENCE PUBLICATIONS

ASEIC-01

Passive Control of Transonic Flow over a Blunt Body Using Aerospikes

Gireesh Yanamashetti[1], D. B. Singh[1], **G K Suryanarayana**[2] and Rinku Mukherjee[3]

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International Conference on Advanced Trends in Mechanical and Aerospace Engineering (ATMA-2019), 7-9 November 2019

Abstract

Pressure fluctuations of large magnitude occur on the heat shield of a launch vehicle configuration when the nose-cone angle of the forebody increases beyond certain angle, due to transonic buffet oscillations. Buffet occurs due to strong interactions between the transonic shock-wave and boundary layer, causing alternating flow over the heat shield. Wind tunnel tests featuring unsteady pressure measurements at various locations indicated very high levels of fluctuations due to buffet. In order to control the pressure fluctuations, an aerospike was introduced upstream of the nose. Shadowgraph recordings show that the eddies generated from the shear layer of the aerospike interact with the shock oscillations, resulting in a destructive interference and suppression of shockwave oscillations. Consequently, there was a dramatic reduction in the intensity of pressure fluctuations on the heat shield. The results show that a passive aerospike can effectively control transonic buffet phenomenon.

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ASEIC-02
Passive control of transonic buffet oscillations over a launch vehicle using aerospike

Gireesh Yanamashetti[1], D. B. Singh[1], **G K Suryanarayana**[2] and Rinku Mukherjee[3]
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International Conference on Advanced Trends in Mechanical and Aerospace Engineering (ATMA-2019), 7-9 November 2019

Abstract
Semi-cone angle of the nose is an important parameter which can trigger transonic buffet oscillations over the heat-shield on certain types of launch vehicles. Wind tunnel tests on the forebody shape of a typical configuration featuring nose cone, heat shield, boat tail followed by a cylindrical body indicated that the nose cone with semi-angle of 25° experienced buffet oscillations at Mach numbers in the range 0.90 – 0.94. Shock oscillations resulted in alternating flow featuring by strong coupling between the transonic shock-wave and boundary layer separation at the foot of the shock over the heat-shield region. Consequently, jumps occurred in the pitching moment of the configuration. Surface-flow patterns show the occurrence of a pair of clockwise and anticlockwise vortices and reversed flow on the leeward side of the heat-shield region. Introduction of an aerospike was found to remove the jumps in pitching moment, alleviate the shock-oscillations as well as the pair of vortices. Computations show good agreement with experimental results related to the surface-flow features. Further, computations also show reduction of local supersonic pockets as well as pressure gradients in the leeward region. Thus, the aerospike appears to function as a passive flow-control device to generate a shear layer that surrounds the leeward side of the heat shield in a separation bubble, to alleviate transonic buffet forcing function associated with launch vehicles which have large nose-cone angles.

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING SCHOOL OF ENGINEERING

Publication Summary

International Journals	27	(CSEIJ-01 – CSEIJ-27)
International Conferences	07	(CSEIC-01 – CSEIC-07)
International Book Chapters	07	(CSEIB-01 – CSEIB-07)

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SCHOOL OF ENGINEERING
INTERNATIONAL JOURNAL PUBLICATIONS

CSEIJ-01
An Application of an EM Algorithm for Skew Detection of Signatures in Text Images: Signature Extraction from Images

Rajesh T. M[1], Kavyashree Dalawai[1]

[1]Department of Computer Science and Eng., School of Engineering, Dayananda Sagar University, Bangalore-560068, India

Abstract

For security purposes of important documents and transactions in real world applications, we generally use biometric techniques for the authentication and validation of a person. If one has to achieve accurate results in the identification and verification process using a signature in text images as a biometric trait, we need to remove the skew of the signature in text images. In the preprocessing stage many phases are being carried out, among these phases, the signature in the text image, skew detection is the most significant phase, because these de-skewed results will be used as one of the features in the feature extraction phase to identify and verify the signature. In this article we are proposing a novel method for skew detection of the signatures in text images using an estimation and maximization (EM) algorithm which is efficient and fast. The EM algorithm sequentially works in two stages, the combination of estimation (E-step) and the maximization (M-step) which helps in detection of the skew in skewed signatures in text image accurately.

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CSEIJ-02
Analysis on techniques used to recognize and identifying the Human emotions

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Abstract

Facial expression is a major area for non-verbal language in day to day life communication. As the statistical analysis shows only 7 percent of the message in communication was covered in verbal communication while 55 percent transmitted by facial expression. Emotional expression has been a research subject of physiology since Darwin's work on emotional expression in the 19th century. According to Psychological theory the classification of human emotion is classified majorly into six emotions: happiness, fear, anger, surprise, disgust, and sadness. Facial expressions which involve the emotions and the nature of speech play a foremost role in expressing these emotions. Thereafter, researchers developed a system based on Anatomic of face named Facial Action Coding System (FACS) in 1970. Ever since the development of FACS there is a rapid progress in the domain of emotion recognition. This work is intended to give a thorough comparative analysis of the various techniques and methods that were applied to recognize and identify human emotions. This analysis results will help to identify proper and suitable techniques, algorithms and the methodologies for future research directions. In this paper extensive analysis on various recognition techniques used to identify the complexity in recognizing the facial expression is presented.

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CSEIJ-03

SMART URT A NLP FRAMEWORK

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Abstract

Unstructured data remains to be a challenge in every data intensive application domains like business, research and technology driven companies and they are in the form of tweets, news, emails, reviews etc. Using text analytics we can extract meanings, patterns, and structure hidden inside unstructured text data. The term "text analytics" is an integrated framework by using techniques from data mining, machine learning, natural language processing (NLP). Text analytics uses techniques and methods that are used to get insights from unstructured data. These techniques can be broadly classified as topic extraction or modelling, cluster analysis which is a part of exploratory data analytics and sentiment analysis also called text classification which is a part of predictive text mining which is also called machine learning. To apply any kind of text mining technique like clustering or classification on text it has to be first pre-processed and need to be converted to a bag of words model so that we can extract features form the preprocessed data where we convert documents into vectorized format using word frequency count which has values in binary form so the machine(computer) can understand. SMART URT extends for Smart Unified extraction of sentiments from reviews and topics from documents which is a natural language processing unified framework in which I built a topic extraction model using text cluster analytics and also built a sentiment analyser which predicts if a movie review is positive negative or neutral.

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CSEIJ-04
Review on Neural Network based Techniques for Detection of Breast Cancer Cells

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Abstract

One and only of the utmost mortal ailments instigating high transience habitually in women is Breast Cancer. Enduring exertions are completed for forming efficacy practices aimed at foremost in addition to precise diagnosis. Conventional approaches necessitate oncologists to scrutinize breast abrasions intended for recognition as well as cataloguing of numerous phases of cancer. These kind of labor-intensive efforts are time intense and unproductive in several scenarios. Henceforth, there is a requirement for effectual and competentapproaches that detects and spots the cancerous cells without human participation with high accurateness.

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CSEIJ-05
Web Phishing Detection using Neural Network Framework

Shaila S.G[1] and Naksha V[1]
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Dayananda Sagar University, Bangalore-560068, India

Abstract

In recent times, Phishing poses a major threat to individuals in regular day to day activities. Phishers use mock email and send illicit links to obtain solitary data and money related records, for example, usernames and passwords. Through veiling unlawful URLs as legitimate ones, aggressors can deceive clients to visit the phishing URLs to get private data and other private information's. Identification of Phishing websites and reliable websites costs many Internet handlers millions of dollars. The frameworks as on today for identifying phishing websites are on a very basic level and new techniques are expected to take big leap in identifying the dangers presented by phishing assaults. One of those techniques involves the usage of Index Value to assess the effect of ideal highlights on phishing websites. These ideal highlights are utilized to build the neural system and an ideal classifier is made to detect the phishing sites. The technique presented here can exclude the over-fitting issue of the neural system to a greater degree.

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CSEIJ-06
Early Detection of Breast Cancer using Convolution Neural Network

Shaila S.G[1], Rashmi Parouti[1], Gurudas VR[1]
[1]Department of Computer Science and Eng., School of Engineering, Dayananda Sagar University, Bangalore-560068, India

Abstract

Breast cancer is extremely predominant in women's today. It first starts once cells within the breast begin to grow out of management. It is found that the detection of tumor at the primary stage can cure it. Manual detection of a cancer cell is a tiresome task and involves human error, and hence computer-aided mechanisms are applied to obtain better results as compared with manual pathological detection systems. In deep learning, this is generally done by extracting features through a Convolutional Neural Network (CNN) and then classifying using a fully connected network. Deep learning is extensively utilized in the medical imaging field, as it does not require prior expertise in a related field. In this paper, the proposed approach has trained a CNN and observed that classification accuracy is better compared to other approaches.

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CSEIJ- 07
Review: Mass Screening framework for children with dyslexia using IOT and computing analysis

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[2] Associate Professor, Dept. Of CSE, Dayananda Sagar University, Karnataka, India.

Abstract

Dyslexia is a medical disorder due to which children have difficulties in learning and reproducing the learnt concepts. In this context children are mostly considered to be not interested or negligent towards their studies. According to dyslexia association of India 10-15 % of children enrolled in schools suffer from some type of Dyslexia. Awareness on Learning difficulties and detection is a complicated. As detection of LD requires diverse features it requires proper guidance and intervention . The issues with explicit learning difficulties in kids have been a reason for worry to parents and educators.

Its challenging for the teachers and educationalists to differentiate students with LD and other students. This paper mainly analysis of the paper titled "Diagnosis of Dyslexia using Computing Analysis", Electroencephalogram (EEG) as a tool is used for understanding of brain process and related functions, Number of factors related to Dyslexia and "Power spectral density" is extracted using Gibson test for brain skills. And to identify differences in brain processing using EEG Technology in kids with dyslexia and non-dyslexic. Data sets are generated classifying Dyslexic and non dyslexic and were analysed using the K-means, Fuzzy and ANN classifiers. then the results obtained from these classifiers differentiate between the three different groups (dyslexic, non-dyslexic and disordered). And the next paper "Spatial Blockchain-based Secure Mass Screening Framework for Children with Dyslexia", this paper was mainly focused in detection of symptoms of dyslexia at an age of 8-11 years, so that children can be assisted with various assisting tools and take technologic support so that children can take part in regular schools. This paper is based on Mobile Edge Computing, cloud computing.

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CSEIJ-08
Analyzing and Optimizing the Usability of Website Access

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[4]Anurag Group of Institutions, India.

Abstract

The world wide web (WWW) plays a significant role in information sharing and distribution. In web-based information access, the speed of information retrieval plays a critical role in shaping the web usability and determining the user satisfaction in accessing webpages. To deal with this problem, web caching is used. The problem with the present web caching system is that it is very hard to recognize webpages that are to be accessed and then to be cached. This is forced by the fact that there are broad categories of users and each one having their own preferences. Hence, it is decided to propose a novel approach for web access pattern generation by analyzing the web log file present in the proxy server. Further, it tries to propose a novel hybrid policy called popularity-aware modified least frequently used (PMLFU) that best suits for the current proxy-based web caching environment. It combines features such as frequency, recency, popularity, and user page count in decision-making policy. The performance of the proposed system is observed using real-time datasets, empirically using IRCACHE datasets.

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CSEIJ-09
CNN-BLSTM Joint Technique on Dynamic Shape and Appearance of FACS
Nazmin Begum, Dr. A Syed Mustafa

Abstract
Facial recognition is a process where we can identify or verify a person from digital image or videos and is used in ID verification services, protecting law enforcement, preventing retail crime etc. Past work on automatic analysis of facial expression focuses on detecting the facial expression and exploiting the dependencies among AU's. But, spontaneous detection of facial expression depending on various factors such as shape, appearance and dynamics is very difficult. Joint learning of shape, appearance and dynamics is done by a deep learning technique. This includes a convolutional neural networks and bidirectional long short term memory (CNN-BLSTM). This combination of CNN-BLSTM excels the modeling of temporal information. FERA2015 dataset achieves the state of art.

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CSEIJ-10
Production Analysis and Prediction of TOP using ARIMA Model
Darshan Halliyavar[1], Shwetha M P[1], Sharanabasavaraj[1] , Puneeth S[1], Shivaprasad Ashok Chikop[2]
[1]Department of Electronics and Comm.,Eng., School of Engineering,
[2]Department of Computer Science and Eng., School of Engineering,
Dayananda Sagar University, Bangalore-560068, India

Abstract
Tomato, Onion and Potato are the staple foods that form the essential part of meal in the contemporary world. Lack of co-ordination between the demand, supply and production induces price fluctuation in the developing country like India. In order to overcome this problem a synchronous model should be in place to reduce the price fluctuation. One of the solutions for the mentioned problem, is designed in the work carried out. ARIMA model has been utilized in the work to come up with the best model for predicting the amount of production based on the previous data. The work provides the best AR, MA and ARIMA model and also the prediction for 15 years based on the previously available data. In conclusion, the work provides the ARIMA model for tomato, onion and potato.

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CSEIJ-11
Leaf Disease Identification using Convolution Neural Network (CNN)

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Pavithra N, B.Tech, pavithranagaraju969@gmail.com, Pinky B, B.Tech, pinkybsunil@gmail.com, Sheikh Hammaad, B.Tech, sheikhhammaad@gmail.com, Alfiya Anjum M, B.Tech, alfiyaanjum1234@gmail.com, in Computer Science and Engineering Department, Dayananda Sagar University, Bangalore,

Abstract
The tomato plant is the most broadly cultivated produce in India. As the Convolutional Neural Network (CNN) which comes under the field of image classification is performing the progressive work, thus using an approach of deep learning which mainly centers on achieving high accuracy of leaf disease of the tomato plant. Therefore, the main objective of this paper is to acquire more reliable performance in the identification of diseases. Amidst various plant diseases that affect leaf comprise of Late blight, bacterial and viral diseases have been chosen to differentiate infected leaves from that of the healthy leaves includes Late blight, bacterial and viral diseases. As we know, none of the other method has been proposed earlier which helps in detecting plant leaf diseases for the first time. Hence the proposed model is designed in such a way that it effectively identifies specific diseases that affect leaves of tomato plants through the use of a dataset containing about 4000 leaf images. CNN achieves an overall accuracy of 96% without implementing any pre-processing and feature extraction methods

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A survey and development on context-aware monitoring in healthcare with big data

S.R. Reeja*, Murthuza Ali Baig[1], Rino Cherian[2]; K. Jothimani[2]

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Abstract

Context aware monitoring are the three words which are building a rapt in healthcare with help of emerging technologies like 'big data, cloud computing, IoT', etc., through which the healthcare had reached to advance level. With advance to the emerging technologies 'wireless sensor network and body sensor networks' are playing a prominent role in healthcare through which the data is collected and send to the cloud for better analysis. The services with context-aware are built in mobile services and applications so that they can offer contextually needed data to the developer. The word context recognizes the information in automatic manner and respond anticipated according to the needs and helps the people to be aware of social surroundings based on the contextual information. As various mobile devices, technologies, application and networks are developing in huge number the efforts to make a usable application is more important in achieve success in the industry. As context-aware is spreading in different technologies with big data, cloud, IoT, machine learning is making adverse effects with thesetechnologies its gaining boom in market which helps the context-aware to develop further in technology to make people life easy and finding a solution to a appropriate problem.

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CSEIJ-13
A Survey on Different Approaches for Malware Detection Using Machine Learning Techniques

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[1]Dayananda Sagar University, Bangalore, India

Abstract

Malwares are increasing in volume and variety, by posing a big threat to digital world and is one of the major alarms over the past few years for the security in industries. They can penetrate networks, steal confidential information from computers, bring down servers and can cripple infrastructures. Traditional Anti-Intrusion Detection/Intrusion prevention system and anti-virus software's follow signature based methods which make the detection of unknown or zero day malwares almost impossible. This issue can be solved by more sophisticated mechanisms in which, static and dynamic malware analysis can be used together with machine learning algorithms for classifying and detecting malware. Through this paper we present a survey on the different techniques for concealment and obfuscation used to make sophisticated malware as well as the different approaches used in malware detection and analysis.

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CSEIJ-14
An Improvement of Compelling Graphical Confirmation Plan and Cryptography for Upgrading the Information Security and Preventing Shoulder Surfing Assault

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Abstract
Humans are continuously alluded as the weakest connect within the security chain stating that the issue does not lie with the security framework themselves but with clients who do not comply with the security conventions. The paper focuses on a proposed graPHYICal authentication mechanism, since a human brain contains a way better capacity to memorize pictures or images, the proposed plot will serve the reason of better memorability, security as well shoulder surfing assault.

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CSEIJ-15
A Computational Intelligence Paradigm with Human Computer Interface Learning

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Abstract:
The cognitive Science is the leading technology which works on the principle of Neuroscience. Human Computer Interface is a challenging approach in neurosciences, which is the leading method to handle the brain activities to control external communications with the electronic devices for physically challenged human beings. The various HCI applications are developed with this advance technology. This helps in various patients which are physically challenged or facing the lock in syndrome, a condition where limbs are not functioning to full extent. Therefore, this paper is the review paper to the various EEG signal classification techniques using different taxonomy with techniques like linear, nonlinear, stableubstable, static-discriminant to design various HCI applications

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CSEIJ-16
PIXEL LEVEL REVERSIBLE DATA HIDING USING TWO LEVEL ENCRYPTIONS REVIEW

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Abstract
At some level of transmission of data is not secure and safe so to make the data more secure there are many methods to follow, Cryptography and Steganography are the one among them. These uses the data as an information and make them into a cipher form or just hide the existence of the data in other forms of the data then the data can be transferred in a protected way. The combinational use of both Cryptography and Steganography helps in providing the better security than the individual work of their own. The CryptograPHYIC algorithms are used to provide two-level encryptions by converting the Original Text data into a cipher form of an integer valves with a Private Secret key whereas the Steganography converts the cipher integer values into RGB values and then modify a single pixel in each frames of the video which is selected by the user using the encryption. At the receiver's end the RGB values are obtained by the selected pixels then the integer value is obtained by these RGB values then the integer values obtained is decrypted in the first frame to the secret key, then other frames are retrieved and the integers obtained here are decrypted with the help of secret key, then the decrypted values are the ASCII values which are converted into its characters and then appended to the original message and then the message is displayed.

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CSEIJ-17

AVOIDANCE OF SPILL IN SECRET DATA TRANSMISSION BY RADIAL SYMMETRICAL MODEL USING DATA MINING

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Abstract

The key information gets spilled during the transmission of secret data to the destination again the critical measures were replaced by some unapproved places. The point of approach is to take note of the information spilled time by specialists and check the possibility of trademark in which the operator used for learning which released by World Health Organization. We have bring round to joins a false articles into unique data set that is sensible to the specialists, however it doesn't relates to the genuine elements. The merchant got the opportunity to affirm that the spilled data originated by lot of specialists and square measure severally assembled. The items conveyance to operators is conceivable by exhibiting the information designation techniques and calculations that is utilized to recognize the learning source. Our point is to recover the underlying data from counterfeit items. The information reliance between the various specialists is done by actualizing the radially symmetrical dynamic idea Model and set up together the symmetric reasoning diagram could likewise be attracted to signify the dataset by misuse this philosophy.

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CSEIJ-18

Improving Energy Consumption of a Node in Wireless Sensor Networks

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Abstract

A node in a Wireless Sensor Networks (WSN) can spend its energy by sending a packet to next node and receiving a packet from other node. A node is having a more number of neighbours. It can lose its energy very quickly when compared with less number of neighbouring nodes. That is intermediate node will always be a transceiver. Most of the time, nodes in the environment spend its energy for sending a repeated data or information. For ex: If any event occurred, single event information is passed to the sink node multiple times. Due to this repeated message, a node lost its energy by sending and receiving the packet to other node. In this paper we proposed an Energy Consumption (ECON) model that will filter the repeated message and it can save the energy of a node. This model will work efficiently in clustered network. Because of this model, the total network lifetime is also increased.

Keywords : Wireless Sensor Networks, Nodes, Energy Consumption, ECON, sink node, Cluster.

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CSEIJ-19

Cluster Tendency Methods for Visualizing the Data Partitions

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Abstract

Clustering is widely used technique for grouping of data objects based on similarity features. The similarity features are derived from the similarity or dissimilarity metrics like Euclidean, cosine etc. Traditional clustering methods such as k-means, and other graph-based techniques are major techniques for discovery of clusters. However, these methods require user interference for determining the number of clusters initially. Determining the number of clusters for given data is known as cluster tendency. There is chance for getting poor clustering results when using either k-means or graph-based clustering methods with intractable value of 'k' by user. Thus, it is required to focus on cluster tendency methods for knowing prior knowledge about number of clusters in clustering. This paper presents the various visual access tendency (VAT) methods for good assessment of number of clusters.

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CSEIJ-20

Energy Aware Fuzzy Logic Secure Data Aggregation (EA-FSDA) technique for Wireless Sensor Networks

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Sanjay Chitnis, Dept. of CSE, Dayananda Sagar University, Bangalore, Karnataka

Abstract

Increased demand for wireless communication system has gained huge attraction from various research communities, industries and academic field due to their significant advantages of facilitating efficient communication for real-time applications. With respect to wireless communication, monitoring (i.e. environmental) using WSN is considered as a significant task that has numerous challenging issues such as network deployment, data aggregation and data transmission in hazardous environmental conditions. In this work, we have focused on the data aggregation process in WSN and developed a novel approach to improve the network lifetime using a proposed solution based on the fuzzy logic scheme, which is called as Energy Aware Fuzzy Logic Secure Data Aggregation (EAFSDA). Furthermore, we present a privacy-aware mechanism for secure data aggregation to improve the system reliability. The privacy-preserving scheme is developed using homomorPHYIC data encryption scheme. Hence, the proposed approach provides a complete solution for efficient and protected data aggregation for WSN that aids in improving the performance of the network. Finally, we present a comparative study which proves that the proposed EA-FSDA technique attains improved network performance in contrast with existing techniques.

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CSEIJ-21

Optimized Uplink Scheduling Model through Novel Feedback Architecture for Wimax Network

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Abstract

Broadband Wireless Access has drawn the fine attention due to the wide range of data requirement and user mobility all the time. Moreover, WiMAX provides the best QoE (Quality of Experience) which is based on the IEEE 802.16 standards; this includes several services such as data, video and audio. However, in order to provide the effective and smooth experience i.e. QoS scheduling plays one of the critical part. In past several mechanism has been proposed for effective scheduling however, through the research it is observed that it can be furthermore improvised hence in this we propose a mechanism named as OUS (Optimized Uplink Scheduling) which helps in improvising the QoS. In here, we have proposed a novel feedback architecture and proposed optimized scheduling which helps in computing the bandwidth request this in terms helps in reducing the delay as well as jitter. Moreover, the performance evaluation is performed through extensive simulation by varying the different SS and frequency and the results analysis confirms that our mechanism performs way better than the existing algorithm.

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CSEIJ-22
Cloud Computing Performance Analysis Strategy to Enhance the QoS for Imminent IT Sector

Bindu Madavi K P, P.Vijayakarthik, S.N.Sheshappa, M.Sangeetha, S.Dhanasekaran, B.S.Murugan

Bindu Madavi K P, Dept. of CSE, Dayananda Sagar University, Bangalore, Karnataka.

Abstract

Cloud Computing has rapid growth in the recent computing era. The cloud services (SaaS, PaaS and IaaS) are utilized by numerous organizations. Cloud performance plays an important role in enhancing quality of service for future information technology infrastructure. The proper analysis of performance is most crucial and helps the user to make the right decision. The factors needed to consider for the performance analysis in cloud computing are security, fault tolerance, storage, and scalability. The paper presents a survey on the major cloud performance factors. We also discuss different approaches for increasing performance in cloud computing.

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CSEIJ-23
Tree Integrated High Utility Miner for Improving an Efficiency of Association Mining

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Abstract

Finding associations among the items is the crucial step in the discovery of frequent itemsets. Traditional association mining algorithms include, apriori, frequent-pattern growth (FPgrowth) are performing well in a frequent item-sets generation. Both mining algorithms use the support-confidence framework for filtering out the item sets based on infrequent nature. In significant applications, like e-commerce, web recommendations, and healthcare, the support-confidence framework is not enough due to unable to considering the influenced utility factor. It is required to develop utility-based mining algorithms to overcome the limitation of traditional algorithms. Recent advances in association mining were focused on the development of utility-based mining algorithms. This paper presents the proposed work related to utility and frequent itemsets based mining algorithms using tree structure construction for performing active utility-based association mining. The experimental section describes the efficiency of the proposed methodology with the demonstration of experimental results conducted on benchmarked datasets.

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CSEIJ-24
Artificial Intelligence – Futuristic Pediatric Healthcare

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Abstract

Quality, affordability and accessibility in healthcare services are the three biggest challenges faced by Indian population. A recent report ranks India at 145th place out of 195 countries on the basis of healthcare access and quality index. As majority of patients do not approach a physician in the initial stages, their disease is usually diagnosed when it has reached an advanced stage. This results in increased the cost of treatment, and also reduces the likelihood of recovery . Early detection of disease followed by holistic management can help in prevention of such diseases. Artificial Intelligence (AI) can be useful in developing cost-effective and easily accessible digital tools for pediatricians in identifying diseases in their early stages.

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CSEIJ-25
Role of Feature Selection in Building High Performance Heart Disease Prediction Systems

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Abstract

In the last few years, there has been a tremendous rise in number of deaths due to heart diseases all over the world. In low and middle-income countries, heart diseases are usually not detected in early stages which makes the treatment difficult. Early diagnosis can help significantly in preventing these diseases. Machine learning based prediction systems offer a cost effective and efficient way to diagnose these diseases in an early stage. Research is being carried out to increase the performance of these systems. Redundant and irrelevant features in the medical dataset deteriorate the performance of prediction systems. In this paper, an exhaustive study has been done to improve the performance of the prediction systems by applying 4 feature selection algorithms. Experimental results prove that the use of feature selection algorithms provides a substantial increase in accuracy and speed of execution of the prediction system. The prediction system proposed in this study shall prove to be a great help to prevent heart diseases by enabling the medical practitioners to detect heart diseases in early stages..

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CSEIJ-26
A Systematic Review of Different Data Compression Technique of Cloud Big Sensing Data

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Abstract

Sensing devices like camera, satellite, earthquake monitoring, video etc., are producing large number of data. Big data techniques paves the way for the handling the more number of data along with streaming data. Cloud computing technology makes it easy to store, access and manage the data with low cost. The data compression techniques help to minimize the data in the cloud and store the data effectively. The aim of the study is to provide a systematic review of the data compression on big sensing processing. The image compression is used to minimize the size effectively and useful for the cloud environment. The deduplication technique is another method is used to compress the data in the cloud and helps in minimize the size. The clustering based compression technique process the cluster for similar data. The three kinds of compression technique in the cloud are investigated in this study. The investigation of this methods shows that the compression technique is still need to be increased in the manner of scalability and flexibility.

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CSEIJ-27
Cross media feature retrieval and optimization: A contemporary review of research scope, challenges and objectives

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Abstract

Predictive analytics that learns from cross-media is one among the significant research objectives of the contemporary data science strategies. The cross-media information retrieval that often denotes as cross-media feature retrieval and optimization is the crucial and at its infant stage. The traditional approaches of predicative analytics are portrayed in the context of unidimensional media such as text, image, or signal. In addition, the ensemble learning strategies are the alternative, if the given learning corpus is of the multidimensional media (which is the combination of two or more of test, image, video, and signal). However, the contributions those correlates the information of divergent dimensions of the given learning corpus is still remaining in the nascent stage, where it is termed as cross media feature retrieval and optimization. This manuscript is intended to brief the recent escalations and future research scope in regard to cross-media feature retrieval and optimization. In regard to this, a contemporary review of the recent contributions has been portrayed in this manuscript.

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INTERNATIONAL CONFERENCE PUBLICATIONS

CSEIC-01
Analysis of Secure Multimedia Communication in Cloud Computing

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Abstract

The exponential up surge of cloud computing and multimedia data communication has alarmed academia-industries to develop more efficient and robust solution, especially secure data transmission system. Unlike classical text data security, multimedia data security requires methods with better signal preserving capacity as well as computational efficacy. Such needs become inevitable for cloud computing environment where there can be gigantically large number of users active simultaneously and demand Quality-of-Service (QoS) provision for respective data communication. On the other hand, the possibility of data breaches can't be ignored in current day scenario. As solution, numerous efforts have been made using cryptography algorithms and steganography concepts; however higher computational overheads and adaptive attack methods have alarmed researchers to develop more efficient solution. Considering it as motivation, in this paper a review has been performed for the different security challenges for multimedia communication over cloud computing environment, different methods including cryptography and steganography are discussed. In addition, hybrid security systems with cryptography and steganography together have been assessed for respective performance towards secure multimedia data communication over cloud infrastructures. This study revealed that both cryptosystem as well as classical steganography can't assure optimal security as standalone solution. Though, hybrid crypto-steganography approaches have performed satisfactory, their efficacy remain suspicious due to increased attack mechanism like steganalysis. To alleviate such issues, augmenting both cryptosystem as well as steganography, especially for attack-resilient embedding optimization and wavelet analysis can be of paramount significance. It can achieve computational efficiency as well as robust attack resilience towards any possible breach during transmission over cloud infrastructures.

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CSEIC-02
Mass screening framework for children with dyslexia using IOT and computing analysis

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Abstract

Dyslexia is a medical disorder due to which children have difficulties in learning and reproducing the learnt concepts. In this context children are mostly considered to be not interested or negligent towards their studies. According to dyslexia association of India 10-15 % of children enrolled in schools suffer from some type of Dyslexia. Awareness on Learning difficulties and detection is complicated. As detection of LD requires diverse features, it requires proper guidance and intervention. The issues with explicit learning difficulties in kids have been a reason for worry to parents and educators. It's challenging for the teachers and educationalists to differentiate students with LD and other students. This paper mainly analyze of the paper titled "Diagnosis of Dyslexia using Computing Analysis", Electroencephalogram (EEG) is a tool used forunderstanding of brain process and related functions, Number of factors related to Dyslexia and "Power spectral density" is extracted using Gibson test for brain skills and to identify differences in brain processing using EEG Technology in kids with dyslexia and non-dyslexic. Data sets are generated classifying Dyslexic and non dyslexic and were analyzed using the K-means, Fuzzy and ANN classifiers. Then the results obtained from these classifiers differentiate between the three different groups (dyslexic, non-dyslexic and disordered). And the next paper "Spatial Blockchain based Secure Mass Screening Framework for Children with Dyslexia", this paper was mainly focused in detection of symptoms of dyslexia at an age of 8-11 years, so that children can be assisted with various assisting tools and take technologic support so that children can take part in regular schools. This paper is based on Mobile Edge Computing, cloud computing.

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CSEIC-03
Particle Swarm Optimization: A Study on Enhancement of Algorithm

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Abstract

Particle Swarm Optimization is the hypothetical optimizing approach which is encouraged by the collective and friendly nature of group of birds or schools of fish. Recently many advance techniques have been researched on optimization technique and its variations, they derived various new improved versions of optimization technique, developed a new method to achieve the goal state, proposed many variants of the algorithm. Nowadays many types of research are in different areas like data mining, cloud computing, wireless sensor networking, etc with either Standard Particle Swarm Optimization technique or improved version of it. One of the latest research in this area is improving the particle's movement method towards a goal state. The effectiveness of the algorithm totally depends on the selection of control parameters and velocity update strategies. In this article, various enhancement on the particle's movement rule towards goal state is discussed

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CSEIC-04
Challenges Of Artificial Intelligence To Combat Covid-19

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International Conference on Innovative Computing and Communication (ICICC 2020)

Abstract

The current contiguous infectious disease corona virus (COVID-19) has become the biggest disaster globally. The epidemic began in the Wuhan City of China in Nov 2019 and become a threat spreading across all over the world affecting the lives of people. This pandemic needs immediate measures and precautions to avoid its global effects. Along with clinical approaches and treatments .the latest technology has also contributed to control earlier contiguous diseases. From years ago scientist, researchers, doctors, and health care experts are using novel computer technology to solve the mysteries of disease. Artificial Intelligence, A new paradigm has become vital in Healthcare. Various Artificial intelligence tools along with machine learning have been used to analyze, control, and monitor healthcare. This paper discusses the role of AI tools to identify as well forecast the nature of the spread of COVID-19 across the globe. The paper also discusses how Artificial intelligence can provide awareness about the prevalent outbreak and preventive measures to be implemented to combat it.

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CSEIC-05

SURVEY OF DEPRESSION DETECTION USING SOCIAL NETWORKING SITES VIA DATA MINING

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Abstract

Depression detection from Social Networking sites has been studied broadly in previous years. These sites provide a platform for their users to share their life events, emotions, and everyday routine. Many researchers demonstrated that content generated by the users is an efficient way to know about their mental state. By mining user-generated content, depression can be predicted. By collecting all the necessary and relevant information from the social networking sites from the posts, we can predict the person's mood or negativity. This survey paper focuses on prior research done regarding detecting depression levels based on content from social network sites.

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CSEIC-06

ADVENT OF NANO-HEALTH: AN INSIGHT ON MODERN HEALTH SCIENCE AND AYURVEDA

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INTERNATIONAL CONFERENCE ON ADVANCED TRENDS IN MECHANICAL & AEROSPACE ENGINEERING (ATMA-2019), 7-9 NOVEMBER 2019

Abstract

Nanotechnology, a revolutionary perception for future research deals with extremely minute particles of the size 10-9 of a metre. Though it was coined in 1974, scientists are methodically focusing to benefit most from its enhanced qualities. Today, its applications have been flourished in many significant fields such as agriculture, medical sciences, electronics, biotechnology and many more. Nano-health uses Nanomedicine, a fragment of Nanotechnology in health care is very essential as nano drug delivery can minimise the side effects, allows for early detection of diseases, reduce damage to healthy body cells and consumption of drug dosage. Ayurveda – an ancient Indian traditional system of medicine use herbs, metals and non- metals for their medicinal preparations. Incorporating Nano-health in traditional therapy of Ayurveda will certainly eliminate one of the major pitfalls of metal toxic effect in its medicines by converting into biological nanoparticles. An approach of Nanotechnology in general medicine comprises of nanoparticles in delivering drugs, light or heat to specific type of cells in the body. Similarly, several Ayurveda drug dosages are in the form of Bhasma (incinerated metals) – a nanoparticle outcome of several metallic preparations. In this paper, an attempt to cast light on the dominance of nanomedicine approach on both modern and traditional therapeutics by taking at most care of ecology and environment.

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An Expert System for Solving Multi Objective Decision Making Problems: MPSO

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International Conference on Recent Trends in Computer Science & Information, Technology ICRCSIT – 20 organized on 17th & 18th June 2020

Abstract

Multi Particle Swarm Optimization (MPSO) is a modified form of Particle Swarm optimization (PSO) which includes various sub-swarms instead of single swarm, thereby balancing the exploitation and exploration. The optimal solution termed as global best (gbest) is achieved by passing the best fitness value obtained from child swarm and further progression of gbest is achieved by parent swarm. Travelling Salesman Problem (TSP) is an NP hard problem aim is to find the minimum distance for a given cities by traversing exactly one's to reach the final destination. In this paper, MPSO techniques is used for solving multi-objective constraints problems using the proposed Boundary value Analysis (BVA) techniques. Analysis of the proposed techniques is done by comparing with the standard dataset taken from the TSP lib. The analysis is performed in terms of computation time, iteration, optimal value based on best case, worst case and average case, further more analysis is performed based convergence diversity and average convergence diversity. Form the analysis is it very clear that proposed techniques out perform well within a minimum computation time and minimum iteration, in case of particle 30. In future we plan to implement the proposed techniques in cloud computing environment for job scheduling problems.

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INTERNATIONAL BOOK CHAPTERS PUBLICATIONS

CSEIB-01

Chapter 06
Automatic Data Acquisition and Spot Disease Identification System in Plants Pathology Domain: Agricultural Intelligence System in Plant Pathology Domain

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IGI Global Publications

Abstract
Plants play one of the main roles in our ecosystem. Manual identification for the leaves sometimes leads to greater difference due to look alike. People often get confused with lookalike leaves which mostly end in loss of life. Authentication of original leaf with look-alike leaf is very essential nowadays. Disease identification of plants are proved to be beneficial for agro-industries, research, and eco-system balancing. In the era of industrialization, vegetation is shrinking. Early detection of diseases from the dataset of leaf can be rewarding and help in making our environment healthier and green. Implementation involves proper data acquisition where pre-processing of images is done for error correction if present in the raw dataset. It is followed by feature extraction stage to get the best results in further classification stage. K-mean, PCA, and ICA algorithms are used for identification and clustering of diseases in plants. The implementation proves that the proposed method shows promising result on the basis of histogram of gradient (HoG) features.

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CSEIB-02

Chapter 43
Automated Video Surveillance System Using Video Analytics

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Abstract

For security purposes of important documents and transactions in real world applications, we generally use biometric techniques for the authentication and validation of a person. If one has to achieve accurate results in the identification and verification process using a signature in text images as a biometric trait, we need to remove the skew of the signature in text images. In the preprocessing stage many phases are being carried out, among these phases, the signature in the text image, skew detection is the most significant phase, because these de-skewed results will be used as one of the features in the feature extraction phase to identify and verify the signature. In this article we are proposing a novel method for skew detection of the signatures in text images using an estimation and maximization (EM) algorithm which is efficient and fast. The EM algorithm sequentially works in two stages, the combination of estimation (E-step) and the maximization (M-step) which helps in detection of the skew in skewed signatures in text image accurately.

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CSEIB-03

Chapter17
Introducing the Deep Learning for Digital Age: Handbook of Research on Applications and Implementations of Machine Learning Techniques

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Abstract

Deep learning is playing vital role with greater success in various applications, such as digital image processing, human-computer interaction, computer vision and natural language processing, robotics, biological applications, etc. Unlike traditional machine learning approaches, deep learning has effective ability of learning and makes better use of data set for feature extraction. Because of its repetitive learning ability, deep learning has become more popular in the present-day research works.

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CSEIB-04

Chapter19
Introduction to the world of Artificial Intelligence:
Handbook of Research on Applications and Implementations of
Machine Learning Techniques

Shaila S.G[1] and Naksha V[1]
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Dayananda Sagar University, Bangalore-560068, India

Abstract

Today, artificial intelligence is a technology which is completely advanced and very fast growingIt has a very strong and significant influence in our daily lives. Artificial intelligence have created tools and techniques linked to various disciplines such as computational logic, the theory of the probability, the theory of the decision, management science, linguistics and philosophy, etc. This technical area is a standout amongst the new fields in science and designing.

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CSEIB-05

Decoy Technique for Preserving the Privacy in Fog Computing

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Abstract

Fog computing is a process which computes and stores the data, which facilities network services between computing information centers and end devices. Fog computing is additionally fogging or edge computing. Fog computing focuses on increasing the efficiency and to quicken the data computing to cloud for storage and processing. This paper is mainly focus on securing personal information within the cloud employing a fog computing facility and decoy techniques. In the proposed system primary stage each licensed and unauthorized user can refer to the decoy information in fog computing. Using user profiling technique, the authorized user will be identified. If it's an unauthorized user, they cannot access the original data. If it is an authorized user, then it proceeds to the second stage by verifying the challenges. The challenge can be secured with verification code or else it can be a private question. Once authorized users clear the security challenge, they can access the original data.

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CSEIB-06
Bagging for Improving Accuracy of Diabetes Classification

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[2]Department of Computer Science and Eng., School of Engineering, Dayananda Sagar University

Abstract

The quality of human life is improved by detecting diseases effectively based on the rapid development of digital image processing, internet of things and effective deep learning processing. We propose a novel application of Bootstrap, Aggregation, i.e., Bagging for improving the accuracy of diabetes classification in this paper. The model of bagged logistic regression is designed to classify diabetes effectively. The ROC is used to visualize performance of the algorithm based on False_Positive_Rate (FPR) and True_Positive_Rate (TPR). The parameters performancesof the proposed method are compared with the existing techniques. It is concluded that the performance of the current method with bagging is better compared to traditional techniques that do not apply any additional measures.

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CSEIB-07
Keyless, Robust and Cost-Effective Privacy Protection Algorithm for Videos Using Steganography

Jayati Bhadra[1], **M. K. Banga[2]** and M. Vinayaka Murthy[1]
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Abstract

In this paper, a novel reversible keyless steganography algorithm for video piracy protection which uses randomized pixel for hiding authentic information is proposed. Randomization at two different levels is considered which is not in any of the existing algorithms. It increases the security with low cost. This proposed approach enhances the randomization of the specific pixels where authentication informationwill be stored in a frame and the location of such modified pixels is stored in an immediate next frame. Each pair is identified with an embedded random number. Modified least significant bit (mLSB) is used to insert the authentication information bits which is cost effective due to simplicity and can withstand statistical attacks. During extraction, frame with pixel locations is used. The extracted information will be compared. Different quality metrics values proved that it can withstand visual attacks, whereas StirMark test proved its high robustness.

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DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY
SCHOOL OF ENGINEERING

Publication Summary

International Journals	03	(CSTIJ-01 – CSTIJ-03)
Patent Publication	01	(CSTP-01)

DEPARTMENT OF COMPUTER SCIENCE AND TECHNOLOGY
SCHOOL OF ENGINEERING
INTERNATIONAL JOURNAL PUBLICATIONS

CSTIJ-01
A Short Note On Whats app Security Protocol

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Abstract

Understanding, recognizing facial expressions and extracting meaningful emotions from it is a very challenging task in today's Era. In this world, image or video data comes as big data, processing and analysing this type of data manually is highly tedious. But this process is important as the insights of this data can be proved to be beneficial in terms of security and predictions etc. Thus, Facial emotion recognition is a challenging research area and there is a need of atomization. In this approach, we consider facial features such as eyes and eyebrows, NOSE and LIPS to recognize the emotions of face. The flow of the process includes pre-processing steps such as face detection, segmentation, feature extraction, identification of edge points, computing distances and angles between the edge points among features, etc. We considered benchmark database which has large number of images with various expression such as happy, sad, anger, surprise etc., The performance evaluation is done by estimating the classification results for the emotions. The approximate success rate for this proposed approach of analysing the emotions results in an average of 76%. The Result has been compared with other methods used for the same concept and this proposed method performs better and gives more classification accuracy.

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CSTIJ-02
CKMI: Comprehensive Key Management Infrastructure Design for Industrial Automation and Control Systems

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Abstract

Industrial Automation and Control Systems (IACS) are broadly utilized in critical infrastructures for monitoring and controlling the industrial processes remotely. The real-time transmissions in such systems provoke security breaches. Many security breaches have been reported impacting society severely. Hence, it is essential to achieve secure communication between the devices for creating a secure environment. For this to be effective, the keys used for secure communication must be protected against unauthorized disclosure, misuse, alteration or loss, which can be taken care of by a Key Management Infrastructure. In this paper, by considering the generic industrial automation network, a comprehensive key management infrastructure (CKMI) is designed for IACS. To design such an infrastructure, the proposed scheme employs ECDH, matrix method, and polynomial crypto mechanisms. The proposed design handles all the standard key management operations, viz. key generation, device registration, key establishment, key storage, device addition, key revocation, key update, key recovery, key archival, and key de-registration and destruction. The design supports secure communication between the same and different levels of IACS devices. The proposed design can be applied for major industrial automation networks to handle the key management operations. The performance analysis and implementation results highlight the benefits of the proposed design.

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CSTIJ-03
Dynamic Pricing Techniques inDemand-Side Management of Smart Electricity Grids: A Review

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Abstract

Smart grid is the modern era of electricity for improving the country's economy. DSM equalizes energy consumption per day using different techniques, as it affects each consumer's unit cost. Pricing is one of the key components in electricity billing. The supplier prepares integrated electricity offers combining the three elements of the bill, i.e. energy, network costs and taxes and levies. Reducing the electricity cost at residential area is one of the major challenges in DSM. This paper highlights the insight of traditional electricity tariffs and disadvantages of traditional tariffs. The previously mentioned disadvantages can be overcome by Dynamic pricing. It sets flexible rate based on electricity demands. The application of dynamic pricing in electricity is already well known to the following parts of the world China, Korea, Japan and Asia. This paper gives clear picture of dynamic pricing programs RTP, TOU, and CPP, which will be useful for researchers and academicians.

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PATENT PUBLICATION

CSTP-01

Smart Mobile Mosquito Trap Device

Dr. R Nedunchezhian & Dr. M Rajalakshmi, Coimbatore Institute of Technology
Jasma Balasangameshwara - Dayananda Sagar University
Dr. RS Somasundaram, K Sathya & Dr. S Balamurugan, Coimbatore Institute of Technology

Abstract

Is a robotic device that senses mosquito. To lure the mosquito Ultra-Violet Light Emitting Diode (LED) and Sodium Hydrogen Carbonate & Acidic Acid were used. The device is equipped with a camera and center shaft driving motor. To differentiate light & darkness, Light Dependent Resistors (LDRs) are employed. A timer is set to put the rover to sleep mode. The obstacles are detected using ultrasonic sensors while the device is moving. Mosquitos are trapped using the fan trap technique.

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING SCHOOL OF ENGINEERING

Publication Summary

International Journals	**10**	**(ECEIJ-01 – ECEIJ-10)**
National Journals	**05**	**(ECENJ-01 – ECENJ-05)**
International Conferences	**12**	**(ECEIC-01 – ECEIC-12)**
National Conference	**01**	**(ECENC-01)**

ECEIJ-01

Integration of Image and Video Signature in Graphical Password Authentication System

Vaishali Ravi[1], Seema Khan P[1], Usha H Y[1], Yashashwini B N[1], Kanmani B S[1]

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Abstract

In this study we are providing the security and authentication for the user. This paper includes two parts, Image processing using cued click point and video processing using clicked intervals, where the combination of both will generate a password for the user to login. To login its necessary that both the combination need to match. The user is allowed to select their choice of images and video for the process and it is stored in a private database so that they are not available to other users. The password generated by both image and video is hidden from both users and developers. This method is obtained for prevent unauthorized access to important and confidential data and to protect them.

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ECEIJ-02

Synthesis of ultra wideband tightly coupled array with RFSS by using particle swarm optimization algorithm

K. Nishanth Rao[1], **Vaibhav Meshram[1]**, H. N. Suresh[2]

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Abstract

In current scenario, the communication is essentially depends on the design consideration and working principle of an antenna. The design consideration antenna maybe a large size or small size, but it will develop in various ranges for more applications. In previous antenna's having a problem on design considerations like frequency and materials. In this paper presents the particle swarm optimization (PSO) optimized technique with the FSS surface for UTC antennas. PSO method increases accuracy of the antenna parameters. With the help of these techniques, we maintained the Bandwidth and gain of the array antenna. Usage of these techniques achieved the radiation efficiency and improved of gain and Low profile with thickness. And hence it improves gain measurement, radiation efficiency, bandwidth ratio etc.

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ECEIJ-03
Design and Performance Evaluation of Ideal and Non-Ideal Effects of Pipeline ADC using Software Reference Models

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[2]Department of Electronics and Communication Engineering, Dayananda Sagar University, Bengaluru

Abstract

Analog-to-digital converter (ADC) is one of the key component in any of the application oriented system design. This paper mainly focused on the simulation of various non-ideal parameters of an ADC as the number of resolution increases. The effect of non-ideal aspects like Jitter model and error block model are created in Matlab Simulink and the results are plotted. The dynamic non-ideal characteristics are discussed with their mathematical models and are compared with the equivalent resolution ADCs. The preliminary observations are also drawn according to the ideal characteristics. This shows that as the resolution increases, the bandwidth of non-ideal characteristics are also increases. This work is entitled to prove the non-idealities of 12-bit Pipeline ADC.

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ECEIJ-04

Design and Analysis of a High Speed CMOS 12-bit 400-MSample/s using Switched Capacitive Flip around Technique for Pipeline ADC

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[2]Department of Electronics and Communication Engineering, DSU

Abstract

In today's VLSI systems, increase in speed of analog and mixed-signal circuit design has emerged as a crucial challenge. This paper describes the design of 12-bit 400 MS/s pipeline Analog-to-Digital converter (ADC) for high speed applications. In the pipeline ADC design is mainly focused on resolution and high speed to meet various applications. The advantage of pipeline technique is simple to implement, easy to design layout and have flexibility to improve in speed. A proposed technique includes an operational transconductance amplifier (OTA), sample and hold circuit (S/H), comparator and multiplying DAC to implement the pipeline ADC. A switched capacitor integrator module is used to convert differential input voltage into current through OTA. A S/H circuit is incorporated in the initial stage of a pipeline design, which removes a dedicated S/H amplifier. Simulation result shows that the ADC has achieved a maximum differential and integral nonlinearities are +0.48/-0.55 LSB and +0.61/-0.75 LSB, respectively. Signal to noise dynamic range (SNDR) obtained is 64.2dB and a spurious free dynamic range (SFDR) of 81.8dB. At transistor level each block is designed, simulated and verified using Cadence EDA tool with 45nm technology on analog design platform.

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ECEIJ-05
Hybrid dual core photonic crystal fiber as hydrostatic pressure sensor

Vijay Shanker Chaudhary[1], Dharmendra Kumar[1], Rajan Mishra[1], **Sneha Sharma**[2]
[1] Department of Electronics and Communication Engg., M.M.M. University of Technology, [2] Department of Electronics and Communication Engg., Dayananda Sagar University

Abstract

For pressure sensing, a novel hybrid-dual core photonic crystal fiber (H-DCPCF) is proposed with elliptical and circular air holes based on coupling of modes between the two cores of H-DCPCF. Under different applied hydrostatic pressure, the mode coupling between two cores of H-DCPCF is numerically analyzed. The transmission spectrum of the sensor is very sensitive to the applied hydrostatic pressure on the H-DCPCF. It is observed that the hydrostatic pressure given to the HDCPCF is linearly related to the peak wavelength shift of the output transmission spectrum of sensor. Numerical simulation shows that the 6 cm long hydrostatic pressure sensor based on HDCPCF has a sensing range from 0 to 1000 Mpa and a sensitivity of -11.6 pm/Mpa.

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ECEIJ-06
Twin core photonic crystal fiber for temperature sensing

Vijay Shanker Chaudhary[1], Dharmendra Kumar[1], Rajan Mishra[1], **Sneha Sharma**[2]
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Abstract

Photonic crystal material based twin core photonic crystal fiber (TC-PCF) is proposed for sensing of temperature. Two independent waveguides present in TC-PCF due to two solid cores in the cross-section separated by an air hole. When the optical light is injected into one core at the input side of twin core, then due to mode coupling between two waveguides light is transmitted from one core to another core along the fiber. Transmission spectrum of TC-PCF is observed which is sensitive to the temperature because the refractive index of background material of TC-PCF depends on temperature. The temperature sensitivity of 6 cm long TC-PCF is 18.5 pm/0C, which can sense the temperature up to 600 °C.

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ECEIJ-07
Design of chemical sensor based on dual core photonic crystal fiber

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Abstract

A chemical sensor based on dual core photonic crystal fiber (DC-PCF) is designed using COMSOL Multiphysics software based on finite element method. The two cores of the PCF are separated by an air hole and filled with different chemicals such as benzene, ethanol and water. The fundamental modes of the proposed DC-PCF are analyzed, and the maximum coupling length of the proposed sensor is 0.45 mm at 1.55 μm wavelength. Numerical simulation results show that the proposed DC-PCF sensor with a length of 0.5 cm provides a sensitivity of 9615 nm/RIU (refractive index unit).

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ECEIJ-08
Theoretical Analysis of GaN/AlGaN Based Quantum Well Structure

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Abstract

In this paper, we have studied the GaN/AlGaN Based quantum well Structures and describe the numerical code for calculating the band structure of GaN/AlGaN quantum-well wurtzite semiconductors. We have used Luttinger Hamiltonian matrix for calculating wurtzite semiconductors. We have considered the Schrodinger wave equation using finite difference method for conduction band calculation and Luttinger Hamiltonian matrix using finitedifference method is used for the calculations of the valence band structures of GaN/AlGaN quantum-well wurtzite.

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ECEIJ-09
Low Cost Hardware Architecture of Fast Lifting Wavelet Transform for Image Compression

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Abstract

In this work, the researchers have given a low-cost, multiplier-less design with latest DWT (2D lifting technology) for high-speed dual-Z scans. A single dimension parallele row, column processors and five transposing registers are the suggested architecture. Furthermore, a 4N timeline buffer is used to process 2D DWT images with NxN resolution. Flipping architecture is intended to decrease the critical path, replacing multipliers with shifting and adding logic. To reduce transposition and latency buffers, dual Z scanning technology is introduced. The proposed architecture is better for similar performance requirements than the existing hardware architectures. Verilog is defined as the suggested Design Register Transfer Logic (RTL) and is synthesized with Xilinx ISE 14.5. When synthesized with a better hardware efficiency for Xilinx Spartan 6 series field programmable gate array, the suggested architecture works at a frequency of 140.47 MHz.

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ECEIJ-10

Resource Allocation in Orthogonal Frequency Division Multiple Access (OFDMA)- Long Term Evaluation (LTE): Neural Network (NN)

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Abstract

Symmetrical Frequency Division Multiple Access (OFDMA) is utilized in the higher rate Wireless Communication Systems (WCSs). In the correspondence framework, a femtocell is a little cell in building Base Station (BS), which devours less power, short range, and works in a minimal effort. The femtocell has little separation among sender and recipient that give higher flag quality. In spite of the favorable position in femtocell systems, there win critical difficulties in Interference Management. Specifically, impedance between the macrocell and femtocell turns into the fundamental issue in OFDMA-Long Term Evaluation (OFDMA-LTE) framework. In this paper, the Neural Network and Hybrid Bee Colony and Cuckoo Search based Resource Allocation (NN - HBCCS - RA) in OFDMA-LTE framework is presented. The ideal power esteems are refreshed to dispense every one of the clients in the femtocell and large scale cell. The NNHBCCS strategy accomplished low Signal to Interference Noise Ratio (SINR), otherworldly proficiency and high throughput contrasted with customary techniques.

Keywords: Base station, hybrid bee colony and cuckoo search, long-term Evaluation, neural network, resource allocation.

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NATIONAL JOURNAL PUBLICATIONS

ECENJ-01

ARDUINO based Accident Indication and Message Alert System

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Abstract

Increment in population is the significant purpose behind quick development of innovation and vehicles, which is additionally liable for some number of mishaps in this quick moving world. Numerous passing is caused because of absence of crisis administrations. Along these lines, in this undertaking we intend to give crisis administrations to the individual who meet with a mishap as quickly as time permits. At the point when a vehicle meets with a mishap, promptly the accelerometer sends varieties to the Arduino and subsequently the Arduino sends the alarm message through the GSM MODULE, including the area which is distinguished by GPS MODULE to recently spared crisis contacts. In the event that the mishap is not serious, at that point the alarm message can be ended by the driver by a key gave. This paper points in giving crisis benefits as quickly as time permits for future extension, we include numerous applications like liquor recognition and rest discovery and so forth.

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ECENJ-02

Text to Speech Converter using ARDUINO

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Abstract

With headway in innovation, PCs and other electronic gadgets not just are able to change over the verbally expressed words into content, however, they can peruse message so anyone can hear. This innovation can help individuals with vision weakness and learning handicaps in a few different ways. The extent of this paper is tied in with executing a disconnected book to discourse converter. This innovation empowers the visual debilitated individuals to convey effectively as the content composed by them will be changed over into discourse. Additionally, in the event that they need to peruse any e-record, the content will be changed over into discourse therefore empowering them to gain admittance to the data in the report.

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Design of Self-Sustainable Street Lamp using Solar-Wind Hybrid Energy System

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Abstract

As we are moving towards a future where the basic resources required to generate electricity (non-renewable energy sources) are getting depleted; we will face shortage of power and thus, we are focusing towards creating self-sustainable energy devices. The current street lamp makes use of solar and an external power source for its operation. This external power source is nothing but the city's power grid from which the street lamps draw power. This is the maximum source of its power. Solar energy provides very minimal amount of power supply which is not sufficient to self-sustainability of the street lamps. In order to overcome this issue and make the street lamps completely self-sustainable, we have come up with this concept of energy harvesting smart street lamps, which makes use of wind energy along with solar energy to power up the street lamps the entire night. The objective of this project is to make an energy efficient smart street lamp which makes use of available renewable sources of energy to generate electrical power. It makes use of 6 vertical axis wind turbine around the street lamp pole to tap into wind energy. The pole is also integrated with 2 solar panels to tap into solar energy. It also involves design and simulation of a multi-input charge controller to accommodate power inputs from multiple wind turbines and solar panels simultaneously. The energy will finally be stored in a battery through which the street lamps can be charged.

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ECENJ-04
Energy Paint Clean and Renewable Sources of Energy for the Future

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Abstract

Sustainable energy has become a need of today's world. The world is getting exhausted and polluted by using the non-renewable resources, and the pollution has driven the planet to a point of desperate measures to bring down global warming. The solution called "ENERGY PAINT" for self-sustainability can be a breakthrough to a much more sustainable form of energy generation for the future. A new concept of combining a new material along with the normal paints can help us to generate a cleaner fuel called hydrogen. The absorption properties of this new material can revolutionize the method of producing hydrogen as fuel from the buildings around us. This technology can increase the efficiency of the solar panels by painting the energy paints on them. A structure can be transformed into an energy producing structure. Energy paints can be affordable method for every common man to produce energy for sustainability and a better future.

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ECENJ-05
Arduino based Fan Speed Control System

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Abstract

The ascent of temperature on the planet can be caused because of a few elements like an unnatural weather change, ozone harming substance discharge and numerous other such factors. Climate change is one of the most discussed logical issues of the previous 20 years. The worldwide temperature of the earth has expanded on a normal of about 0.8 degree Celsius (1.4 degree Fahrenheit) since 1880. Since the control of this rising temperature is not in our hands, we have built a project that helps us control the speed of the fan in a room depending on the rise and fall of the room temperature. This paper discusses temperature based fan control fan speed control and monitoring the system using an Arduino system. The system uses an Arduino board to implement a control system. The study was conducted with the design and manufacture of automatic fan control system. Along with Arduino, we have use a temperature sensor LM35 to sense the temperature of the room. The fan control system discussed in this paper is economical, efficient and very reliable.

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INTERNATIONAL CONFERENCE PUBLICATIONS

ECEIC-01
An IOT Framework for Healthcare Monitoring and Machine Learning for Life Expectancy Prediction

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Abstract

The beginning of IoT era, shrinking of devices and the concept of intelligent independently learning machines has led to improvements in the quality of human life. The application of machine learning to IoT data has led to automation of creation of analytical models. One key area of research that has seen such a revolution is the health care sector. This work aims to design a wireless healthcare system that detects patients vitals using sensors, transfer data to cloud and predict the approximate life expectancy using machine learning techniques. The notion of Internet of things (IoT) interconnects devices and offers effective health care service to the patients. Here the IoT architecture gathers the sensor data and transfers it to the cloud where processing and analyses takes place. Based on the analyzed data, feedback inputs are sent back to the doctor and using the present pulse rate of the patient, nominal or approximate value of life expectancy is predicted using machine learning algorithms.

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ECEIC-02
Adaptive Neuro-fuzzy Control of Solar-Powered Building Integrated with Daylight-Artificial Light System

Sanjeev Kumar T M[2], Surabhi Sharma[2], **Anna Merine George[1]**, Dr. Ciji Pearl Kurian[2], Manu Varghese S[2]

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Abstract

To meet the increase in energy consumption and to reduce global warming, power sources based on sustainable energy are in demand. Of the different sustainable power sources, solar energy is the most viable option. Artificial intelligence (AI) centered control strategies are a part of sustainable power source frameworks. This paper shows the effectiveness of an adaptive neuro-fuzzy inference system for maximum power point tracking (MPPT) of a photovoltaic system. A boost converter with adaptive neuro fuzzy-based incremental conductance MPPT algorithm and a lithium-ion battery-based bi-directional DC-DC converter controlled with a voltage-current controller for power balancing and DC bus voltage regulation is discussed. A Simulink model developed by taking the climate data as the standard input for solar photovoltaic (PV) module and daylight-artificial integrated scheme. The work involves system design towards the load side for building and designing of the PV system to achieve maximum power and efficiency for a fixed tilt using PVSYST. The performance of Fuzzy Logic Control based incremental conductance MPPT technique is compared with the adaptive neuro-fuzzy inference-based control. Using the model energy availability and energy consumed is estimated. The models are validated using actual pyranometer readings.

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ECEIC-03
Characterization of Battery life of an IOT based Wireless Networked Office Lighting System

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[2] Director, BNMIT, Bangalore, India

Abstract
Battery lifetime in the order of several years and millimeter size devices are a target for future sensor nodes while ensuring autonomous energy operation. Increasing battery life is essential when batteries are expensive, or in security and remote health monitoring applications where replacing batteries are difficult or critical. Some techniques to increase battery lifetime include reducing the active mode current, reducing the active time, proper selection of ultra-low power processors and connectivity solutions, duty cycling the sensors and optimization of clock speed and number of wakes and run time. This work considers the lifetime estimation of an IOT based sensor-actuator system controlling LED luminaire and window blinds based on ultra-low power processors and nano timer in an office lighting scenario. For connected systems, the power required for data processing on the device and communication protocols is too demanding. Also for an IOT device the proportion of time in each operating state strongly influences battery lifetime. A comparison of battery life using different IOT processors and connectivity solutions is also depicted.

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ECEIC-04
2D Photonic Crystal based Biosensor for detection of Cervical Cancer cell

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Abstract
Biosensor is a device used to detect the presence of biological analyte. In this work a 2D photonic biosensor is been designed to detect the cervical cancer cell in women's cervix. The proposed sensor consists of input and output waveguide with a center ring. The quality factor Q of the proposed biosensor is 248 and the sensitivity of the measurement is 143nm/RIU. The holes in the sensor is filled with cervix blood sample cells. The proposed sensor has a band gap of 1100nm to 1680nm. The biosensor is been modelled and designed using FDTD method. The dimension of the proposed sensor is 8µm X 6µm. The change in the refractive index of the cervical cells and normal cells gives corresponding wavelength shift.

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ECEIC-05

Design and Analysis of Chalcogenide Based Photonic Crystal Fiber for Non-linear Optical Applications

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Abstract

The linear and nonlinear optical properties of the chalcogenide photonic crystal fiber (PCF) is designed and analyzed. Numerical simulation shows that the proposed PCF is highly nonlinear and provides all normal dispersion values in the range of wavelength 2 to 5 μm, The non-linear coefficient of designed PCF is 3.5 W −1 m −1 at wavelength 2 μm. The designed highly nonlinear and all normal dispersion chalcogenide PCF can be very useful in nonlinear optical applications such as generation of supercontinuum in the mid-infrared wavelength region.

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ECEIC-06

Design of Hexagonal Photonic Crystal Fiber with High Nonlinearity and Low Confinement Loss for Optical Coherence Tomography Application

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Abstract

In this paper, we have theoretically investigated hexagonal photonic crystal fiber (HPCF) for the application of optical coherence tomography (OCT). HPCF is designed using COMSOL Multiphysics software based on FEM. We have considered the periodic arrangement of air holes that is air in holes and silica is used as background material for designing the PCF. The proposed PCF shows very low confinement loss 0.1×10 -3 db/km at 1.1μm wavelength and high nonlinearity γ=120 [w.km] -1 at 1.1 μm wavelength. This design also shows flattened dispersion from 0.9 μm to 0.95 μm, which is also used for laung haul data transmission application.

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ECEIC-07
IOT early flood detection and avoidance system

Ann Mary Chiramel, Deyashene Nag, Malavika Sajith, Nandita Rao**, Divyashree H B[1],
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International Conference on Recent Trends in Science & Technology- ICRTST - 2020

Abstract

Flooding is usually brought on by an increased quantity of water in a water system, like a lake or a river. In cases of a dam getting fractured, abruptly releases a massive quantity of water. The outcome of such a situation is that a large amount of the water travels into the soil, and floods the region. Apart from the destruction of products, house, office, property and street infrastructures, flood water consists of bacteria and sewage flow of waste sites and chemical spillage which leads to a variety of diseases eventually. Flood predictions need information like: The speed of change in river stage on a real time basis, which may help indicate the seriousness and immediacy of this threat. Understandingthe form of storm generating moisture, such as length, intensity and a real extent, which is valuable for discovering potential seriousness of the flood. In this system we make use of a Arduino Uno interfaced with 4 different sensors, named as Ultrasonic sensor for measuring water levels , float sensor to detect water level, Flow sensor for knowing speed of water and humidity sensor for weather conditions. These combinations of sensors are used to predict flood and alert respective authorities with the help of IOT and sound instant alarm in nearby villages to instantly transmit information about possible floods. These sensors provide information over the IOT using a Wifi module. On detection of conditions of flooding the system predicts the amount of time it would take to flood in a particular area and alerts the areas that could be affected by it. The system also calculates the time it would take for flood to reach them and provides some time to the people in order to evacuate accordingly.

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ECEIC-08
Power Aware GALS Based Pipelined DES System

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Abstract

The method of cryptography establishes the confidentiality for digital data transmission and storage. Cryptography is used in different applications like ecommerce, health-monitoring and military for protecting information. The Data encryption standard (DES) is widely used cryptograPHYIC algorithm due to its symmetric nature and economical implementation to provide short term data security. The same key and architecture set is used for encrypting and decrypting in DES algorithm accordingly. The substitution operation is performed by S-Box by using the key to obtain information uniquely. This paper implements DES algorithm using Globally Asynchronous Locally Synchronous (GALS) methodology which uses independent clock. This improves speed due to its pipelined architecture enabling concurrent data processing. The encryption and decryption engine are implemented by VLSI architecture. This architecture is simulated in Verilog HDL and synthesized on the Xilinx 14.2 device. The logical units of architecture on Field Programmable Gate Array (FPGA) increases by 6.25% to provide improved security. Hence, the speed is improved by trading off with area. This proposed method is proved to be robust for Differential Power Analysis (DPA) which is analyzed from the statistics of the processing time through 50000 encryptions.

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ECEIC-09
Dual Frequency Reconfigurable Patch Antenna for S Band Application

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Abstract

The mechanism of reconfiguration is important to enhance the performance of an antenna as it can switch between different frequencies in a dynamic environment. In this paper, we propose a single layer microstrip rectangular patch antenna with parallel slots to obtain two resonant frequencies. The feature of reconfigurability is attained by using PIN diode switch. The simulated antenna performs switching either in the 2.4GHz or 3.7GHz by operating PIN diode in the off or on state in a particular slot. A parametric simulation is carried out to position the slots and switches which optimize a return loss less than 10dB and a gain greater than 5dBi. The proposed design provides better gain with reconfigurable feature.

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ECEIC-10
Designing of Adaptive Depth Control for Autonomous Underwater Vehicle Using Type-2 Fuzzy Logic Controller

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Abstract

Adaptive depth control for an autonomous underwater vehicle is presented in this research. The response of an underwater system is moderate compared to air monitoring systems. The slow response is due to the speed constraints and high density of water. Establishing an accurate control technique for AUV is a difficult task due to the nonlinearity of hydrodynamic elements. The depth control analysis was done using PID control and type-2 fuzzy logic controller (Type-2 FLC). Type-2 FLC is used to tune the PID controller. The dynamic functionalities of an AUV are determined by using six degrees of freedom differential equations of motion keeping fixed earth as reference. Modeling and analysis of AUV are presented in the research and simulation of the model is done using MATLAB. Precise results for depth analysis are obtained using type-2 FLC.

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ECEIC-11

Bacterial Foraging Optimization Based Maximum Power Point Tracking for Photovoltaic System under Partially Shaded Condition with Interleaved Resonant Fly-back Converter

C Sunil Kumar[1], **Dr. Puttamadappa C[2]**, Dr. Y L Chandrashekar[3],
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Abstract

Due to the non-uniform temperature and irradiance level of PV array, Maximum Power Point Tracking (MPPT) techniques are becoming more common to boost the system efficiency even under varying and unpredictable weather condition. Selection of small value of step size consequence in more convergence for MPPT and large value produces more power oscillations. Therefore, a Bacterial Foraging Optimization (BFO-MPPT) algorithm will be proposed to optimally choose the value of duty cycle that helps to operate the converter at MPP. Moreover, the interleaved converter will helps to attain large output power with less ripples and high efficiency. The results may prove that the BFO-MPPT can achieve less burden during computation and low computational time with global convergence.

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ECEIC-12
INDUCED TRANSIENTS COUPLING TO BRAIDED AND NONBRAIDED SHIELDED CABLES DUE TO LIGHTING.

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[3]Professor, Department of Electrical & Electronics Engineering, AIT

Abstract

The problem of determining the currents induced in termination networks at the ends of a coaxial cable by an incident electromagnetic field is quite important in determining the electromagnetic compatibility of electronic systems.Radio frequency interference, either radiated or conducted can seriously disrupt the proper operation of the equipment's. The most common way to reduce a device's sensitivity to external EMI is to shield it with a conducting material which is electrically grounded. Equipment's may be shielded by manufacturers but external cables that connect these devices should also be shielded to reduce their sensitivity to interference.In the case of shielded cables, the coupling can be considered in two stages: coupling to the external circuit and coupling to the internal circuit.A sudden change in the electrical conditions of any circuit will cause a transient voltage to be generated from the energy stored in circuit inductance and capacitance. A coupling model based on Transmission Line Theory is developed for determining the transient currents and voltages induced within braided shielded cables by an impinging transient pulse generated by lightning event.The transmission-line (TL) approach is one of the most commonly used methods for the analysis of the radiated susceptibility of complex cable bundle networks.The Transmission Line theory is applied to establish the differential equations describing the behavior of the cables in the presence of a uniform plane travelling wave.The coupling of EM field to unshielded wire over a ground plane has been analyzedfor vertically and horizontally polarized incident Erays.The calculation of the induced voltage in the center conductor of the coaxial cable requires thedetails of the lightning waveform, the induced sheath current and the surface transfer impedance. The modeling of the shielded cable exposed to lightning current waveform is carried out to compute the surface transfer impedance, sheath current, induced voltage and current in the center conductor.

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NATIONAL CONFERENCE PUBLICATIONS

ECENC-01
GSM Based ATC Automation

Sree Samanvitha M, Vadhoolas, Sushmitha B.K, Swathi P R, Tejashwini M, **Navya R**,
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National Conference on Microsystem Technologies (NCMST), 5th -6th March 2020

Abstract
Air travel is the fastest means of transport. It helps us to reach various places in the world as quickly as possible. This facility is to be controlled properly and also every passenger who travels by air should reach the destination safely. The runway clearance given to the pilots is presently done manually and this human interference is one of the r easons for accidents in the runway. Technological advancements help us achieve highly reliable and relevant systems. To reduce the runway accidents caused by human errors that occur during landing, a GSM-based ATC (Air traffic control) system is proposed. The proposed system automates few processes at the airport by which runway crashes can be avoided, human errors can be reduced and the lives of the people can be saved. The land-request messages and the sensor data from all the points are sent to one common place and decisions are taken from the single base point i.e., the main microcontroller. The microcontroller thus acts as the Air Traffic Control (ATC). It sends the details of the runway clearance automatically to the pilot on receiving a landing request (SMS), only after verifying it to be authorized. If there is an airplane on the runway or in any of the gates, clearance will not be sent. Also, if the request is unauthorized, clearance will not be sent. A centralized GSM authentication is used for sending the clearance message (SMS), to the pilot, which consists of the gate number to land in. Gate numbers will be selected automatically with the help of the information provided by sensors installed at the gates.Sensors that are placed near the runways check whether the runway is busy or not. The flight arriving at each gate is displayed on the LCD.

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DEPARTMENT OF MECHANICAL ENGINEERING
SCHOOL OF ENGINEERING

Publications Summary

International Journals	09	(MCEIJ-01 – MCEIJ-09)
International Conferences	15	(MCEIC-01–MCEIC-15)
Book Chapters	05	(MCEIB-01–MCEIB-05)

DEPARTMENT OF MECHANICAL ENGINEERING
SCHOOL OF ENGINEERING
INTERNATIONAL JOURNAL PUBLICATIONS

MCEIJ-01

Transient CFD Analysis of Different Cross-Section Fins Under Free-Convection Conditions

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[2]Department of Mechanical Engineering, Dayananda Sagar University, Bengaluru-560068, India

Abstract

Manufacturers of aerospace and defense equipments are presently facing challenges related to both steady state and transient reliability of electronics systems; the continuing reduction in size of electronic components is resulting in higher power density due to which thermal management of electronic components is critical in electronic product development. Among heat transfer augmentation technique, passive cooling technique is more suitable than active cooling for specific applications. Also providing fins can regulate the temperature of the system at optimum levels by providing extended surface area of contact with surrounding cooling medium- air. In the present work, the Transient analysis has been carried out for three different cases to determine the transient performance considering different cross-sectional fins such as Tapered, Round and Rectangular configurations. The fins are subjected to free-convection cooling which are placed on plate with four heat sources each dissipating 100W power. Transient analysis is carried out using ANSYS CFD software for time step of 20 seconds and results obtained for different cross-section are compared for optimum temperature levels.

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MCEIJ-02

An Interactive Computation Platform for Engineers and Scientists - MATLAB

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[2]Department of Mechanical Engineering, Dayananda Sagar University, Bengaluru - 560068, India

Abstract

MATLAB provides an interactive environment for numerical computation, programming, visualization, graPHYICs, animation and complete ability to easily carry across platforms with its own high-level programming language, all under one roof. Although MATLAB provides simple, powerful and faster computation platform, it has its own strength, weakness and competition among other available commercial computation program software's. MATLAB tries to give meaning to scientific computing through its added features and capabilities also provide a shallow learning curve with easy extensibility. This paper is intended to bring out an overview on built-in functions that provides excellent tool for computations on linear algebra, optimization, signal processing, Data analysis, Quadrature (Numerical Integration), numerical solution to Ordinary Differential Equations (ODEs) and numerous functions for two dimensional and three dimensional graPHYIC plots. Also it is proposed to solve the heat transfer problem involving differential equations using MATLAB. Further MATLAB post-processing capabilities will be used to analyze the problem, based on which design decision can be taken.

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MCEIJ-03

A Study on Electromagnetic Harvester with Sputter Coated Cantilever Beam Using Finite Element Analysis

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Abstract

The work is focused on measuring model parameters of a piezoelectric bending energy harvester cantilever beam with sputter coated technique using finite element analysis. The beam was studied for a wide range of frequencies of about 100-1200Hz. The finite element simulation results confirm that the vibrations in the above mentioned frequency range can be effectively utilized to generate energy. Design of electrometrical vibration energy harvester was carried out with literature survey and the effect was analyzed for the given length of beam to the voltage produced by the harvester. The Electromagnetic analysis induced voltage is validated with the help of commercial finite element software ANSYS. The simulation results revealed that the effect of sputter coating on the beam will increase the power generation.

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MCEIJ-04

Thermal behavior of PC-ABS based graphene filled polymer nanocomposite synthesized by FDM process

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Abstract

Property enhancement of polymers could be achieved through blending of two or more polymers and via addition of filler materials to meet the application requirements. In the present investigation Polycarbonate (PC) and Acrylonitrile Butadiene Styrene (ABS), the two polymers were blended together and Graphene platelets as nanofiller were added in the ratio of 0.2, 0.4, 0.6 and 0.8 wt% respectively. Polymer blend and graphene platelets were mixed at appropriate temperature and extruded out in the form of filament of 1.75 mm diameter. Filament was used as a feed material for Fused Deposition Modelling (FDM) to develop the test samples. The nanocomposites developed using FDM were subjected to differential Scanning Calorimetry (DSC) and Thermogravimetric Analysis (TGA) to study the effect of graphene platelets. Addition of graphene platelets resulted in significant increase in Young's modulus with highest value of 4.038 GPa obtained for nanocomposite with 0.8% graphene content. Thermal analysis showed that addition of graphene platelets increases the glass transition temperature and reduces the mass with increase in temperature.

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MCEIJ-05

Reliability Based Maintenance Model to Assess the Condition of Rotor using XL rotor

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Abstract:
The work carried out is focused on study and behavior of rotors and to check the reliability at the design stage using the advanced XLrotor tool. For the selected rotor, the failures are controlled by shifting critical speeds above the maximum speed in which it is designed for. The rotor is balanced with safe limits of vibration severity criteria as per ISO standards for an optimized model. Sensitivity analysis is carried out on the rotor model by varying factors such as the diameter of shaft, disk configuration, disk offset, and load on rotor model. The results obtained show good agreement with the FEM results. The results obtained are undamped & damped critical speeds, as well as velocity & dynamic load on bearings due to imbalance using XLrotor. The rotor model is balanced for a steel shaft with a steel disk as well as a steel shaft with an aluminum disk (optimized rotor model) as part of the corrective method. The work clearly emphasizes XLrotor for designing a highly reliable rotor that is safe for operating conditions.

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Finite Element Simulation Analysis on Blade and Stator Assembly Using Pin and Spacer for Turbines

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Abstract

In the present work, design modification and stress analysis of blade and stator assembly for turbines using pin and spacer method are carried out. The locker pins are a kind of small device that locks the bucket and inserted them into the grooves. To avoid centrifugal force, a spacer is placed between tangential blades that make more comfort. Design calculations are calculated and the obtained stresses and simulations are performed by using commercial finite element analysis software ANSYS 14.5. Observed stresses on space and locker pins are much below the yield stress of the material.

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MCEIJ-07
Optimization of High Speed Rotor - Bearings System to Assess the Reliability using XL rotor

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Abstract

The research work is focused on the behavior of the Nelson rotor with bearings in order to predict the dynamic forces (critical speeds, vibration levels, and load on bearings at peak amplitude) acting on it, which tends to decrease reliability. The reliability of the rotor system not only depends on static stress, but also dynamic stress which directly affects the performance. This work is mainly focused on the computation of a rotor system using the XLrotor tool. The tool effectively computes the results with the least acceptable error compared to other simulation techniques. The primary failure in the rotor assemblies is due to imbalance, which leads to misalignment, looseness, bent shafts, and bearing faults. The imbalance is an inherent property of rotors which leads to an increase in the centrifugal force of rotors. The Nelson rotor with a bearing configuration (Isotropic, Orthotropic and Fluid film Bearings) is modeled in XLrotor to analyze the rotor performance to determine Undamped Critical Speeds (UCS), Damped Critical Speeds (DCS), and Vibration Levels at Imbalance and Load acting on Bearings at peak amplitude. The rotor is optimized and suggests a reliable model using the XLrotor.

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Quantitative probing of static and dynamic mechanical properties of different bio-filler-reinforced epoxy composite under assorted constraints

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Abstract

The present research work is focussed on the development of agro-waste-based bio-filler-reinforced polymer composites with reinforcement derived from three different plants sources and investigating its static and dynamic mechanical properties with strain rate and temperature variation. The chosen plant sources are wood, bamboo and coconut, derived from the stem and fruit part of the plant. The reinforcing fillers are subjected to alkali treatment to make its surface rougher and suppress moisture absorption. A specific grade epoxy composite is prepared using five different weight fractions of all three micro size treated particle fillers. The composite specimens are tested in uniaxial tension loading with varying crosshead speeds to evaluate its effect on strength and stiffness of bio-composite samples. Moreover, the linear elastic fracture mechanics is applied to reveal the fracture toughness value and mechanism of fracture initiation and propagation. The glass transition temperature and damping factor of the produced reinforced plastic material are evaluated with dynamic mechanical analysis over a spectrum of temperature from RT to 150 °C. It is observed from the result that Young's modulus value increased by approximately 16% as filler type is changed from bamboo to wood. For the best static mechanical properties, coir and wood filler are found to be the most suitable amongst all three filler materials. Moreover, the glass transition temperature was observed to be increased as filler type changes from stem kind to fruit kind for most of the filler loading.

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Experiment on the Performance and Emission Characteristics of the Blend B25 of Papaya Oil Methyl Ester on a Diesel Engine with Standard and Magnesium Stabilised Zirconia Coated Piston

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Abstract

The long term ongoing research in the field of automobile is to increase the efficiency of the engine and to reduce its harmful exhaust emissions. It is well known that only the one third of the thermal energy produced during the combustion of fuel is converted into useful mechanical work. Thermal barrier coating reduces the rate of heat transfer and utilizes the maximum rate of heat developed for the complete combustion of fuel. In this paper a comparison is made on the performance and emission characteristics of the blend B25 of papaya oil methyl ester on a single cylinder diesel engine with standard and magnesium stabilised zirconia coated piston under variable loading condition from no load to full load in the incremental of 20% and its thermal analysis using ANSYS. The blend B25 is selected because it is found optimum when compared with its other blends in earlier investigation

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INTERNATIONAL CONFERENCE PUBLICATIONS

MCEIC-01

A meso-mechanical study of the effect of straight shank hole in fml plates subjected to tensile loading

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International Conference on Advanced Trends in Mechanical & Aerospace Engineering (ATMA-2019), 7-9 November 2019

Abstract

Fibre Metal Laminates combine the strength of polymers and the adaptability of aluminium to form novel exotic composite materials that can potentially replace both aluminium and Fibre reinforced polymers. Usage of FMLs in aircraft structures has challenges of its own. One such challenge is joining FML plates to the airframe. The most common method of joining various structural components is riveting. This method of joining introduces stress concentration due to rivet holes, varied load paths, added secondary loads etc. These complications along with bi-material interface on a mesoscopic level are seldom studied. This study addresses the above mentioned shortcomings through a detailed 3-dimensional stress analysis. Accurate prediction of these local stresses will lead to better prediction of fatigue life as well as the joint strength of the structures. Glass fibre reinforced aluminium composite (GLARE) is chosen as the ideal specimen for these studies since it is actively explored as a viable replacement for the existing structural components. A square plate with a centrally located hole is loaded in tension. The GLARE plate is modelled using ABAQUS Standard platform. 8-noded hexahedral elements are functionally graded to appropriately simulate the stress concentration developed in each layer for a particular load. The detailed layer wise behavioural study is presented by plotting the stress and force values obtained across time and displacements. Furthermore, a parametric study of different types of GLARE is carried out to formulate a holistic understanding of the effect of tensile load in an infinite plate with a standard rivet hole.

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Numerical and Experimental Analysis of Thermal conductivity for PC-ABS reinforced graphene nanocomposite developed by Fused Deposition Modeling

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International Conference on Advanced Trends in Mechanical & Aerospace Engineering (ATMA-2019), 7-9 November 2019

Abstract

Present investigation focuses on numerical and experimental studies on thermal conductivity of polymer nanocomposites reinforced with graphene particles. Fused Deposition Modeling (FDM) a process of Additive Manufacturing (AM) is used to develop specimens for analysis of thermal conductivity. Polycarbonate (PC) – Acrylonitrile Butadiene Styrene (ABS) was taken as matrix material in definite proportion and Graphene was added in different weight proportions. The mixture was developed into filament of 1.75mm through the process of compounding and extrusion. The test samples were developed through FDM. Experimental results were compared with well-known mathematical models for thermal conductivity test from the literature. The variation of thermal conductivity behavior with varied percent of graphene is elaborately discussed in this study.

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Review of Cryogenic Treatment on Metal Matrix Composites

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International Conference on Advanced Trends in Mechanical & Aerospace Engineering (ATMA-2019), 7-9 November 2019

Abstract

The tool down time is one of the important factors in machine tool industry while machining with the help of different cutting tools. The cryogenic treatment is a one-time permanent, sub-zero heat treatment that entirely changes cross-section of cutting tool. The physical and mechanical properties such as hardness, toughness beside tribological properties such as wear resistance, coefficient of friction, surface finish, and dimensional stability are vastly improved by the cryogenic treatment involving deep freezing of cutting tool materials. Thus cryogenic treatments on metals and alloys have drawn the attention of researchers. The present review discovers the previous studies those are conducted on LM25-SiC matrix composites specially focusing on deep cryogenic treatment. The review also briefly introduces the concept of deep cryogenic treatment through review their gaps which has been found in previous studies will be analyzed and authenticated in future.

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MCEIC-04
Development on graphene based polymer composite materials and their applications-a recent review

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International Conference on Advanced Trends in Mechanical & Aerospace Engineering (ATMA-2019), 7-9 November 2019

Abstract

Graphene is a super material in the material science world because of high surface area, excellent thermal conductivity, high electron mobility, high young's modulus, high light transmittance. In this work, a recent review is carried on graphene based polymer composites and their applications. Different properties such as mechanical, thermal, electrical and medical properties of graphene based polymer composites are discussed. Potential applications and development in the field of polymer composites, synthesis and processing are discussed and their vital roles are elaborated.

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Effective Rotordynamics Computational XLrotor Tool for Analyzing High Speed Machine Tool Spindle – Bearing System

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International Conference on Advanced Trends in Mechanical & Aerospace Engineering (ATMA-2019), 7-9 November 2019

Abstract
The work is focused on computation of high speed rotor bearing system using XLrotor. The spindle-bearing system which is considered as the most significant component of machine tool. The dynamic behaviour of spindle-bearing at varying speeds affects machining productivity and quality. Therefore at design and development stage it is necessary to know the dynamic forces acting on rotor model that causes resonance. The XLrotor advanced computational method is adopted for analysis to assess, investigate and evaluate the performance of spindle- bearing system. The XLrotor tool performs effectively the complete rotordynamic analysis which determines Undamped Critical Speeds (UCS), Campbell diagrams, Imbalance Response and Load on Bearings at Imbalance. For rotor model, the balance correction masses and locations is calculated from measured vibration signature and balancing is carried out for spindle – bearing system as part of corrective measure using XL rotor.

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MCEIC-06
Effect of Nano Fillers on Glass/Silk Fibers Based Reinforced Polymer Composites

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International Conference on Advanced Trends in Mechanical & Aerospace Engineering (ATMA-2019), 7-9 November 2019

Abstract
The need for more eco-friendly and biodegradable materials has resulted in greater advancements in the field of nano-materials and their utilization in polymeric matrix materials as filler materials has been rising day by day in developing sustainable natural fiber reinforced polymeric composite laminates. The striking properties like high aspect ratio and larger surface area of nanocomposites have made them to be used in several engineering and commercial sectors such as biotechnology, packaging, aerospace and automotive, building and construction industries. The hybrid composites that exploit the harmony between natural fibers and synthetic fibers in nano filler based reinforced polymeric composites helps in bettering various mechanical properties as well as assists in sustaining environmental biodegradability to acceptable level. In the research investigation, glass/silk/Ca2SiO4 reinforced hybrid epoxy composites are manufactured via hand lay-up method using standard ASTM methods. The mechanical properties such as tensile, bending and impact strength are being evaluated. The hybrid composites of glass fiber (50 wt. %), silk fiber (10, 9, 8 & 7 wt. %), Ca2SiO4 nano filler (with 0, 1, 2 & 3 wt. %) reinforced with epoxy (40 wt. %) are scrutinized and results reveal that the composite laminates with 3wt. % Ca2SiO4 show better tensile, flexural and impact strength properties.

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MCEIC-07

Fabrication of Hand Operated Briquetting Machine to Increase Energy density of Loose Biomass

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International Conference on Advanced Trends in Mechanical & Aerospace Engineering (ATMA-2019), 7-9 November 2019

Abstract

Biomass is the important source of energy to meet the energy requirement of large population. Biomass is available from agro residues and saw dust is disintegrated in nature. Briquetting of these biomass is important to increase the energy density; hand operated briquetting machine has been fabricated to compress the biomass obtained from sawdust and rice husk. The die of the press can produce a briquette of five centimeter diameter and ten centimeter length. The use of biomass briquettes for direct combustion and thermochemical conversion has been an important aspect in reducing global greenhouse gas emission. Water and starch have been used as binders. The biomass briquettes obtained from starch have better adhesive quality. Proximate analysis of the briquette has been carried out to understand fixed carbon, moisture, volatile matter, ash and Sulphur content.

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Enhancing the performance of preheated b20 vegetable seed oil by varying the compression ratio and using cerium oxide as stabilizer

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International Conference on Advanced Trends in Mechanical & Aerospace Engineering (ATMA-2019), 7-9 November 2019

Abstract

The main purpose of the present investigation is to effectively utilize the biofuel along with cerium oxide as stabilizer powered with a. single cylinder variable compressible ratio diesel engine fuelled with the B20 blend waste vegetable seed biofuel (WVO).. Ethyl based esters production process from neutralized WVO is optimized by sodium hydroxide (NAOH) single phase reaction to enhance the production of the biofuel. The characterization of WVO extracted from source have been carefully examined and determined in merieux nutriscience laboratories Bengaluru. B20 WVO biodiesel behavior is tested in a diesel engine by varying the compression ratio 16 and 18. Compression ratio 16 had better thermal efficiency and less COx and NOx emission when compared with compression ratio 18. 250 bar injection pressure and 19 injection timing found to have better fuel efficiency and emission characteristics. The influence of cerium oxide as stabilizer in both the engine performance and the produced emissions were evaluated. From the result it is observed that The increase in injection pressure from 210bar to 250bar leads to increase in brake thermal efficiency by 6.1%, mechanical efficiency increases by 4.4% and decrease in brake specific fuel consumption by 5.7%. The CO and HC emission decreases by 3.9% and 3.2% respectively than retarding the injection timing.

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Stability, performance and emission analysis of single cylinder diesel engine fueled with water diesel emulsion as an alternate fuel

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International Conference on Advanced Trends in Mechanical & Aerospace Engineering (ATMA-2019), 7-9 November 2019

Abstract

In the present work, the surfactant concentration is varied and optimised to achieve long term stability of water in diesel emulsion. The non ionic, non-irritant, safe surfactants derived from sorbitan esters and polyoxyethylene groups are used to prepare emulsion by varying the concentration. It is observed that the mixture of span 20 and tween 80 forms a highly stabled emulsion by the aid of mechanical homogenizer. The blends are prepared by adding surfactants and water droplets to the diesel. The viscosity, flash and fire point, calorific value and density of prepared blends were determined as per standards. The experiments were performed in a single cylinder, 4-stroke water cooled diesel engine at constant speed (1500 RPM) over different load conditions. Engine performance parameters and emission characteristics are evaluated. From the results it is observed that brake thermal efficiency increases by 1.2% and NOX reduction is 20 to 30%. Increasing trend is observed for HC and CO emissions with increase in water concentration in water diesel emulsion.

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Carbon capture from atmosphere to reduce global warming: A technical Review

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International Conference on Advanced Trends in Mechanical & Aerospace Engineering (ATMA-2019), 7-9 November 2019

Abstract

Emission of greenhouse gases is the major reason for global warming, mainly due to carbon dioxide (CO_2) from different sources. Capturing CO_2 from atmosphere is very much required to reduce global warming. There are different type's CO_2 capture methods like pre combustion, post combustion and oxy rich fuel combustion. The possible ways of carbon capture and reduction are a) Forests b) Farms c) Bioenergy with carbon capture and storage d) Direct air capture e) Sea water capture f) Enhanced weathering. Selection of feasible carbon capture technique is most important for effective and economical way carbon capture. In this review various methodologies for carbon capture has been carried out. Amongst various methods of carbon capture, activated carbon (AC) is gaining importance because of universal adsorbent properties.

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MCEIC-11

Emission Characteristics of Single Cylinder Diesel Engine with Algae Oil as Bio-Diesel

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International Conference on Advanced Trends in Mechanical & Aerospace Engineering (ATMA-2019), 7-9 November 2019

Abstract

This paper involves entire studies based on the production, fuel characterization, emission characterization of Algae oil biodiesel and its blends Blend20, Blend 40, Blend 60, and Blend 80 were successfully conducted after free fatty acid test and Transesterification Process. Single cylinder of four stroke diesel engine is opted for the emission characteristics of the algae biodiesel, emission characteristics of CO, CO2, NOx and HC on Brake power are evaluated for different diesel blends. Results are evaluated, compared and tabulated.

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CFD Simulation of Transonic turbulent flow past NACA 0012 Aerofoil

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International Conference on Advanced Trends in Mechanical & Aerospace Engineering (ATMA-2019), 7-9 November 2019

Abstract

An aircraft needs to operate under different free stream conditions during different phases of its flight like, take-off, climb, cruise, descend and finally landing. In the transonic speed regime at which most of the commercial aircrafts operate, the aerodynamic performance of the aircraft is affected to a great extent by the presence of various non linearities. The present work focuses on the analysis of transonic flow past a NACA 0012 Aerofoil, which is widely used for modern commercial passenger aircrafts operating at transonic flight speed. The compressible flow field around a NACA0012 aerofoil which forms the cross section of an aircraft wing has been computed using the commercial CFD Software ANSYS Fluent Version 14.5. Numerical simulation of two dimensional compressible flow of air around NACA 0012 aerofoil for a range of flow Mach numbers and Angles of Attack, forms the major contents of this work. Navier Stokes equations for conservation of mean momentum components, coupled to the continuity equation and additional equations for relevant turbulence scalar conservation have been simultaneously solved for a given grid network around the aerofoil. Two different turbulence models viz., Spalart-Allmaras and k-ω turbulence models have been used for the computations. The effect of Mach number and Angle of Attack on the aerodynamic performance of the NACA0012 aerofoil has been studied for a given flow Reynolds number. The detailed chord wise distribution of static pressure, skin friction coefficient and turbulence intensity has been compared to reliable wind tunnel measurement data available in open literature. The computed surface pressure and wall shear stress on the aerofoil have been properly integrated to derive the overall aerodynamic performances like variation of Lift and Drag Coefficient and the Pitching Moment of the aerofoil for given angles of attack and flow Mach numbers.

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Characterization of Banana and E Glass Fiber Reinforced Hybrid Epoxy Composites

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International Conference on Advanced Trends in Mechanical & Aerospace Engineering (ATMA-2019), 7-9 November 2019

Abstract

In this work Fibers of banana and Eglass used as a reinforcement because if its low cost and its abundancy. Normally density of fibre is calculated by using water displacement methods. Fiberwere intially treated with 5% concentration of NaOH and NaCl solution to improve adhesion property between fibres. These fibers are again treated with Hardner - HY951. 20% and 30% of volume fraction of fibres are taken and fabricated using Hand layup method for the dimension300*300mm2 . Change in the volume fraction of FRC's changes the value of young's modulus by making material stiffer. The testing was carried out by the computer integrated universal machine (UTM) which has the capacity of 100KN Kalpak software is used for the data   the testing. Specimen is cut into as per standards for Tension test, three point bending test and hardness test. Tensile and hardness tests are conducted on 30% of volume fraction of fibers (Banana and E glass). Results of tensile test is obtained experimentally results reveal that hybrid combination of banana and E glass fibers are 56% stiffer and intern increases the elasticity and UTS. It was observed that by combining the E-glass fabric with the banana fabric in the composite laminate mechanical properties of the laminate are improved.

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MCEIC-14

Fabrication and Reciprocating Sliding Wear Test against Viton as Per ASTM G 133 and Determination of the Co-Efficient Of Friction of Large Sized Al2014-Sic Composite

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International Conference on Advanced Trends in Mechanical & Aerospace Engineering (ATMA-2019), 7-9 November 2019

Abstract

Aluminium-Silicon carbide alloy composite materials have found use for a number of applications such as engineering structures, aerospace and marine applications, automotive bumpers. Aluminium-Silicon carbide alloy composite materials have found use for a number of applications such as engineering structures, aerospace and marine applications, automotive bumpers etc.. In this paper fabrication of composite is done by taking Aluminum 2014 as a matrix and SiC as reinforcement using vortex flow casting method, Reciprocating sliding wear test revealed that the SiC reinforced composite possesses highest coefficient of friction when compared with the base alloy (Al2014). The loss of all the pin materials was insignificant. Further, the loss in the VITON material is also insignificant.

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MCEIC-15

Design and development of progressive tool for mold tag

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International Conference on Advanced Trends in Mechanical & Aerospace Engineering (ATMA-2019), 7-9 November 2019

Abstract
A progressive tool performs a series of fundamental sheet metal operations at two or more stations during each press stroke in order to develop a work piece as the strip stock moves through the die. The objective of the project is to design a progressive tool for mold tag to meet the customer specification, analyze the punches to determine the stress induced using ANSYS workbench and validate the results with theoretical calculations, fabricate and trial run the designed progressive tool for the component. The methodology of the project includes detailed study of component drawing and generation of blank development & strip layout using AutoCAD software. Based on the strip layout design, various forces are calculated. Total force is used for the design of elements of progressive tool. The design of progressive tool includes 2D drawing and 3D modelling. The 2D drawing is carried out by AutoCAD software and 3D modelling by Autodesk Fusion 360. After the modelling of different punches and dies, the FEM analysis is performed on punches and dies using ANSYS workbench to determine whether the stress and strain are within the allowable limits. It is followed by the manufacturing and assembly of elements of progressive tool. Finally, the tool is fabricated for the production of mold tag component.

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BOOK CHAPTERS

MCEIB-01
A Study on Reliability of Rotors Using XLrotor

Suresh H.N[1], Madhusudan N[2], **Saravana bavan D[3]**, Murgayya S.B.[1]

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Abstract
The work is focused on computation of rotating machines in XLrotor in order to predict the failure due to disk offset and to check reliability. Reliability of rotary machines is not dependent on static design stress but also dynamic forces generated during operating speeds. These rotating machines are subjected to various forces such as misalignment, bend shaft, looseness, imbalance and so on. Though all influencing parameters are diagnosed, still the problems in rotating machines are faced when operated on site (Ambience condition etc.). These problems are severe and cause failure in system within no time. The on-site technological tool helps the plant to know the health of rotating machine, but to avoid resonance and shifting/bypassing critical speeds the simulation tool XLrotor is benefited compared to FEM. To check reliability of rotating machines, the XLrotor computational tool is considered optimum in incorporating the effect of mass, stiffness, inertia and imbalance effectively. The simulation based methodology is used for modeling and analysis for the simple and complex rotors. The analysis in XLrotor due to disk offset on system model shows the vibration level (failure) of rotor and load acting on bearing due to imbalance. The vibration results determine the impact of disk offset on rotor model and its performance.

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MCEIB-02
Influence of drilling parameters on the thrust force and mechanical properties of biodegradable particleboard composite panels

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Abstract

The present work is focused to provide an overview of the influence of drilling parameters on thrust force and mechanical properties of biodegradable particleboard composite panels. The usage of particleboard composite material is augmented substantially in the past few decades and many research works focused on the machining of such materials. Among the numerous conventional machining, drilling is the most commonly used procedure for machining of particleboard, whereas milling and turning are less frequently used in particleboard application. The different machining parameters like feed rate, spindle speed, and drill bit diameter/point angle are found to have major influence on the thrust force during drilling operation. In the present work, a detailed review has been presented considering the effect of machining parameters in the drilling of particleboard. In addition, summarized outlines are presented on the surface characteristics of the hole produced in drilling operation and use of optimization techniques such as Taguchi method, which is a response surface methodology to find the optimized delamination factor. The arrangement of maximum spindle speed with low feed rate was established as an optimum arrangement to produce the minimum thrust force during the drilling operation of particleboard composite panels.

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Analysis of Jeffcott Rotor and Rotor with Disk using XLRotor

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Abstract

The work presented in this paper emphasizes on understanding the causes of failures in rotors and use of XLrotor tool in designing a reliable rotors. The approach to rotordynamics analysis through simulation tool is to determine the undamped/damped critical speeds, imbalance response with different configuration of bearings and mountings that causes change in modes and mode shapes in synchronous vibration. The main aim of this study is to know the critical speeds of rotors at design stage and predict the failure using XLrotor computational tool that improves reliability of system/machines by modifying the parameters. To measure and control the rotor extreme vibrations, the simulation feasible XLrotor tool plays vital role in redesigning the rotor models. In this paper, an attempt is made to study and analyze the developed rotors through simulation technique with validation for understanding the rotor dynamics in reliability engineering. The Jeffcott rotor and shaft with disk is modeled, the rotating machine is solved and analyzed for undamped critical speeds and modes. Also, the impact of mass and stiffness on rotor model is studied and analyzed to define the failure. This study clearly shows overview of XLrotor software and also the power of simulation tool in reliability engineering.

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MCEIB-04

Synthesis and Responsive Study of Tensile and Flexural Properties of Bamboo Filler Based Functionally Graded Composite

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[1]Department of Mechanical Engineering, Dayananda Sagar University, Bangalore
[2]Department of Mechanical Engineering, National Institute of Technology, Silchar, Assam

Abstract

Natural fibers/fillers based functionally graded composite materials (FGCMs) established as a second generation of composite material that can simultaneously deliver higher level of performance and maintain the ecological balance. In the present work, bamboo filler reinforced thermoset epoxy based functionally graded composite is developed. The three different composite samples are prepared with varying the number of layers (5, 4 and 4) and density of layers. The density of each layer is varied through an incremental addition of 3 wt% of bamboo fillers from top to bottom side. The composite samples are subjected to tensile test at three different crosshead speed of 5, 50, and 500 (in mm/min) to evaluate the effect of crosshead movement speed and number of layers on strength and stiffness. The flexural properties of the specimen are also investigated at constant crosshead speed of 2.13 mm/min. It is observed that the tensile strength decreases but flexural strength increases with the increase in number of layers.

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Design and Modeling of Wye Piece

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In: A. N. R. Reddy et al. (eds.), Intelligent Manufacturing and Energy Sustainability, Smart Innovation, Systems and Technologies 169, 461-471, 2020

Abstract
Penstocks are an important component in hydropower plant projects especially when there is a high head turbine need to plant. These must design to withstand high - pressure under static as well as transient conditions. In this paper, we discuss the static stress analysis of internal water pressure in a penstock wye piece and we came to the conclusion that by the addition of concrete and rock to the steel pipe the maximum von Mises stress is well below their respective yield stress.

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DEPARTMENT OF COMPUTER APPLICATIONS SCHOOL OF ENGINEERING

Publication Summary

International Journals	03	(CAIJ-01-01 – CAIJ-03)
International Conferences	03	(CAIC-01 – CAIC-03)

CAIJ-01

Analyzing Various Techniques to Safeguard user Sensitive Data

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Vasanthi Kumari P
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Abstract

There are several different ways to connect people in and around the world. One such way is the use of internet and interactive communication tools (ICT) such as smart phone, tablet, electronic devices and voice assistant. Each and every second large volume and variety of data will be generated by these devices. This kind of large volume with varying speed and variety of data is called big data. Analyzing and identifying the intelligent pattern from this data is called big data analytics. Several different data analytical methods are used to classify and identify the hidden patterns from the raw data. Data is scattered in different systems in different places. Hadoop is the open source platform for processing such distributed data. Hadoop uses the HDFS and map reduce to do distributed computation in secured way. Even though hadoop and map reduce will impose security in its own way, the data collected and processed need more secured methods to prevent the data leakage. There are several different methods, tools and techniques available to impose the security and prevent the privacy of any user's identity. This paper will provide the overall view about the challenges faced during the data storage, data generation and processing in distributed and cloud environment. This paper is divided into 4 sections. Introduction part of map reduce, related works and challenges and vulnerability of data security are discussed in first and second sections. Different techniques used to impose the security is analyzed in the third section and fourth section is the conclusion part.

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CAIJ-02

Crop Monitoring to Measure Internal Quality of Onion

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[2]Professor, Department of Computer Applications, Dayananda Sagar University, Bangalore

Abstract

As food being the major survival for human beings, the quality of food plays a vital role, so agriculture becomes the base for all food ingredients. The fruits or vegetables that are obtained from the farm must have a better quality. The quality depends on the techniques used for the effective growth of the crops. There are various techniques which are used to monitor the growth of each plant. One such technique is the Internet of Things, which connects things and people together. This helps the farmers to produce good products and also consumers to have good healthy food. This paper proposes a method in which sensors are used to monitor the growth of onions by implementing smart farming to produce maximum yield and healthy onions.

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CAIJ-03
Early Prediction of Chronic Kidney Disease in Adolescents using Machine Learning

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Abstract

The rising number of kidney failure in adolescents and young children is of great concern. Pediatric CKD is a dynamic and complex medical and psychosocial disease with unique factors that separate this population from adults. Due to the unique and complex physical, psychological, and family backgrounds, young children may develop damage of kidneys. The long-term mortality for children, adolescents, and young adults with CKD (Chronic Kidney Disease) remains substantially higher than their healthy counterparts. The complex challenges that adolescent and young adult CKD patients face has to be dealt with on a serious note. Adolescents have different CKD etiologies and progress are quite dissimilar to that faced by adults, but have similar multifarious comorbidities. CKD can delay and limit growth. In this paper, various Machine Learning algorithms are used to predict the occurrence of the disease. The benefit of implementing this technique is that the disease can be diagnosed at an early stage based on the various symptoms of the patient and thus can help them to get the diagnosis and treatment on time which will lead to better health and better Quality of Life. Here, the prediction skill of several machine-learning algorithms for early prediction of CKD has been analyzed by usage of predictive analytics, in which the association of data parameters and the target class attributes is done. Predictive analytics enables us to introduce the optimal subset of parameters to feed machine learning to build a set of predictive models.

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INTERNATIONAL CONFERENCE PUBLICATIONS

CAIC-01

Hubble PSO Computational Model for Treating Warts Diseases Using Immunotherapy

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International Conference on Sustainable Computing in Science, Technology & Management (SUSCOM-2019)

Abstract

Wart is an area or volume of growth with an irregular pattern with rough appearance which can appear in any part of the body. In appearance it is similar to a small bubble in the skin with seven inside that bubble. It is caused by a virus, which is named after human papilloma virus family. There are many ways to treat this disease, but only few are efficient enough to eradicate the diseases from the patient suffering from the diseases. One of the treatment is Immunotherapy, which is defined as a therapy which makes use of substances to stimulate or suppress the immune system of human to fight against this virus. Few types of immunotherapy only targets a particular kind of cells of the immune system but the other types affects the whole immune system in general. Immunotherapy is well-established in malignancies in cancer. But now it can also be used in infectious diseases as well. Usually treatment for warts include surgical intervention and lasers, canthirin, 5-fluro, uracil etc. Due to the heaviness of the above mentioned treatment and a high risk of recurrence, immunotherapy is becoming popular especially in some types of warts namely refractory cutaneous and genital warts. We use a computational model to prove that the immunotherapy is more efficient to treat warts diseases that the treatment for warts is more efficient.

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CAIC-02

Intelligent Decision Making System for Solving Traveling Salesman Problems: MPSO

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International Conference on Sustainable Computing in Science, Technology & Management (SUSCOM-2019)

Abstract

Multi swarm Particle swarm optimization (MPSO) is a variant of Particle Swarm Optimization (PSO) where various sub-swarms involved instead of single swarm, thereby balancing the exploitation and exploration. The progression of gbest is achieved by passing the best fitness value obtained from the child swarm and further progression of gbest is achieved by using gbest of parent swarm. TSP is an NP hard problems and its objectives is to find the minimum distance for a given cities and the constraints is to visit all the cities exactly ones to reach the final destination. In this paper we proposed MPSO approach to solve combinatorial optimization problem using BVA techniques comprising (Region_bc(Rg), Replicate_bc(Rp) and Evade_bc(Ev)), the performance of the algorithm is evaluated in terms of computation time, optimal fitness, error rate, convergence rate, convergence diversity and average convergence diversity for particle 30, the proposed techniques outperformance well with minimum computation time for optimal fitness value and error rate. In future we plan to implement the proposed technique in cloud computing environment for job scheduling problems.

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CAIC-03

A Novel approach for prediction of warts disease treatment methods: Machine learning techniques

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International Conference on Sustainable Computing in Science, Technology & Management (SUSCOM-2019)

Abstract

Investigated the efficiency of proposed modalities including immunotherapy and cryotherapy for treatment of wart lesions. Cryotherapy with liquid nitrogen is a favorable and different treatment in most patients. A clinical study of efficiency of garlic extract versus cryotherapy in the treatment of male genital wart. With recent technological advancements in data mining and machine learning techniques, early stage of disease can be predicted with a higher degree of accuracy even in the field of medical diagnosis. We proposed Huddle PSO in machine learning using K-means algorithm and Support Vector Machine (SVM). In future we plan apply the proposed work for the treatment of brain tumors.

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COLLEGE OF NURSING SCIENCES
SCHOOL OF HEALTH SCIENCES

Publication Summary

International Journals	11	(NUSIJ-01 – NUSIJ-11)
Book Chapter	01	(NUSIB-01)

NUSIJ-01

Effectiveness of Self-Instructional Module about Life Skills Education on the Level of Life Skills among Early Adolescent Students of Selected Schools in Bengaluru, Karnataka

Priyanka Gupta, **Sharmila Jayapalan[1]**, Sowmya A. Vasanthakumar[4], and **Shivaleela P. Upashe[1]***

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Abstract

Life skill education programs have been found to be empowering adolescents from economically backward sections of society and they have been adopted to target several objectives among adolescent girls. The objectives of this programme are to promote awareness of the world around them, create awareness on growing issues, enhance mobility, empower to express their opinion as well as the promotion of egalitarian participation in decisions that affect their lives, developing vocational skills and saving mentality in them. The general objective of this study was to assess the effectiveness of the self-instructional module (SIM) about life skills education on the level of life skills among early adolescent students in selected schools in a Bengaluru. This study adopted a single group pre-test and post-test quasi-experimental design. The study participants were selected by a simple random sampling technique, consisting of sixty samples from 9th and 10th standard students of St. Phillomena and Bloosom School in a Bengaluru. The tool consisting of socio-demographic data and life skills scale was given to assess the effectiveness of the SIM about life skills education administering the same questionnaire to assess the post-test. The overall mean post-test level score regarding life skills education (193.34) was significantly higher than the overall mean pre-test level (161.43) score regarding life skills education score. The obtained t-value was found to be 5.714, which was significantly higher ($p0.05$) than the table value. There was a significant ($p0.05$) association found between the pre-test score with the gender of the students.

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NUSIJ-02

Obstetric Danger Signs: Knowledge, Attitude, Health-Seeking Action, and Associated Factors among Postnatal Mothers in Nekemte Town, Oromia Region, Western Ethiopia—A Community-Based Cross-Sectional Study

MisganuTeshoma Regasa,[1] Jote Markos,[2] Ashenafi Habte,[2] and **Shivaleela P. Upashe[3]**
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Abstract

Background.
Maternal mortality remains unacceptably high due to pregnancy complications and remains the major health problems in many developing countries such as Ethiopia. Having poor knowledge of obstetric danger signs contributes to delays in seeking and receiving skilled care which in turn increases maternal mortality. However, in Ethiopia, studies are lacking regarding the knowledge level of mothers about obstetric danger signs during pregnancy, child birth, and postnatal periods. In Ethiopia, the proportion of those who have full knowledge of these obstetric danger signs during pregnancy, child birth, and postnatal period is not known. Despite few studies are conducted at health facility level focusing on danger signs during pregnancy, the issue of health-seeking action after identifying danger signs and attitude of mothers towards obstetric danger sign was not addressed.

Objectives. To determine knowledge, attitude, health-seeking action towards obstetric danger signs, and associated factors among postpartum women.

Methods.A community-based cross-sectional study was conducted in Nekemte Town from October 1 to November 30, 2017. Multistage sampling technique was employed to select the total sample size of 621. Ethical clearance was obtained from Wollega University research and ethical committee. A pretested structured questionnaire was used to collect data from respondents. Data were entered to EpiData version 3.1 and exported to SPSS version 20 for analysis. To assess the associations between dependent and independent variables, binary and multivariate logistic regressions were employed, and the strength of association was presented using odds ratios with 95% confidence intervals.

Result. Only 197 (32.3%) of respondents were able to spontaneously mention at least five key obstetric danger signs during antepartum, intrapartum, and postpartum (in the three phases) with at least one obstetric danger sign in each phase and thus were considered as

having good knowledge of key obstetric danger signs. Government employee (AOR = 3.28, 95% CI: 1.98–5.42), able to read and write (AOR = 4.92, 95% CI: 2.14–11.3), primary school (AOR = 4.90, 95% CI: 2.11–11.4), ANC follow-up (AOR = 6.2, 95% CI: 1.82–21.21), and ANC visit (AOR = 4.07, 95% CI: 2.35–7.06) were significantly associated with knowledge of obstetric danger sign. From 150 (24.6%) participants who faced obstetric danger signs during their last pregnancy, the majority of them, 137 (91.3%), had a good practice which is seeking a health facility for care.

Conclusion and Recommendation. Despite their low knowledge level and attitude, the practice of mothers in response to obstetric danger signs was encouraging. Occupation, educational status, ANC follow-up, and number of ANC visits were variables significantly associated with knowledge of obstetric danger signs. Health care providers should provide health education and counseling to increase awareness, and appropriate counseling during antenatal care at each visit is of paramount importance.

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NUSIJ-03

Mother's knowledge regarding importance of coconut oil massage among infants in primary healthcenter-effectiveness of structured teaching programme

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Abstract

Background of the study: Massage is the manipulating of superficial and deeper layers of muscle and connective tissue toenhance function, aid in the healing process, and promote relaxation and well-being of infant. It is an ancient tradition of
providing nurturing touch as a way of communicating and bonding with baby. Massage can help foster mutual trust andunderstanding between caregiver and child and also which promotes sleep and weight gain.

Objectives: To assess the effectiveness of structured teaching Programme on knowledge of mothers regarding importance ofcoconut oil for massage among infants in kumaraswamylayout Primary health center, Bangalore.

Methodology: The design Adopted is Quasi experimental, (one group pre-test post-test design) the samples were chosen bynon- probability purposive sampling technique, consist 60 mothers of infant at Kumaraswamy layout Primary health center, Bangalore, and a structured knowledge questionnaire was given to assess the knowledge of mothers

of infant regardingimportance of coconut oil for massage for infants. Which followed by a structured teaching program on importance of coconutoil for massage and administered the same questionnaire to assess the post test.

Results: The overall mean post-test knowledge score regarding importance of coconut oil for massage among infants33.75+2.29(97.29%) was significantly higher than overall mean pre-test knowledge scores regarding importance of coconut oilfor massage among infants 9.97+_5.23 (25.58%) and the obtained overall 't' value was 69.91 which is higher than table value.There was no significant association found between the pre-test knowledge scores with the demographic variables of mothers
of infant.

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NUSIJ-04
Primary school teachers' misconceptions about Attention Deficit/Hyperactivity Disorder in Nekemte town, Oromia region, Western Ethiopia

Ashenaf Habte Woyessa ,Thanasekaran Palanichamy Tharmalingadevar , Shivaleela P. Upashe[1] and Dereje Chala Diriba
[1]Dayananda Sagar University

Abstract

Objective: Teachers' misconception on Attention Defcit/Hyperactivity Disorder (ADHD) in general and the implementation of effective educational strategies for children with this problem in particular is one obstacle that largely impacts the academic and overall success of school children with this problem. In Ethiopia, despite there are thousands of school children with this ADHD, no studies have been conducted to examine school teachers' understanding about problem. This research was therefore aimed to investigate primary school teachers' misconceptions about ADHD in Western Ethiopia. Result: In this study, 76.2% of respondents had misconception on general awareness of ADHD. More than half (62.7%) of them had misconceptions on the diagnosis and on 81% had misconceptions regarding treatment of the problem. Concerning teachers' misconception on the contemporarily recommended educational placement of students with ADHD, 141 (68.3%) have said that such students should be placed in part time special education. The findings of this research have clearly indicated that primary school teachers have a wide range of misconceptions about the ADHD. It also reflects the need of equipping teachers with basic knowledge of ADHD which also enables them provide effective support for students with this exceptionality. Keywords: Attention Deficit Hyperactivity Disorder, Misconception, Western Ethiopia

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NUSIJ-05
Assessment of Knowledge Regarding Reproductive Health among Adolescent Girls of Dayananda Sagar International School, Bangalore, Karnataka State, India

Kiran Bajagain, Tenzing Pema, **Sowmya A**[1].Vasanthakumar, **Shivaleela P. Upashe**[1]*
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Abstract
Adolescence is the most pivotal period of life (13-19 years) which is susceptible to major reproductive health problems at the time of puberty; hence it is a major concern. Reproductive ill health accounts for over 30% of the overall burden of disease and disability among women and 12% among men globally. This study was aimed to assess the knowledge level of reproductive health and find out association with the selected demographic variables among adolescents girls of Dayanand Sagar International School, Bangalore. The study is non experimental and descriptive in nature which was conducted in a Dayanand Sagar International School, Bangalore, Karnataka State, India. Thirty samples were selected by simple convenient sampling method from 8th and 9th standards and a structured questionnaire was provided to collect data regarding knowledge related to reproductive health. The result of the study revealed that the adolescent girls' knowledge on over all aspects of reproductive health was moderate (72.2%). Majority of the subjects (76.6%) have adequate knowledge of anatomy and physiology of the reproductive system. About 66.6% have moderate knowledge regarding menstruation and menstrual hygiene. Most of them (76.6%) have maximum knowledge in the area of pregnancy and care whereas moderate knowledge in the area of family planning and STDs.

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Nursing Personnel's Knowledge and Practice Regarding Infection Control Measures in Neonatal Intensive Care Unit-Effectiveness of Structured Teaching Programme

Nizzi V[1], Shivaleela PU[2], Manimegalai S[3], Amitha R[4]

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Abstract

Background of the study: Neonatal nosocomial infections are an important cause of neonatal morbidity, which occurs frequently causes illness and possibly death. Neonates acquire nosocomial infections from other neonates, nursery personnel, their mothers, or contaminated supplies and equipment. So there is a need to stress upon strict adherence to aseptic protocols in neonatal units if infection rates are to be kept low. Objectives: To assess the effectiveness of structured teaching program on knowledge and practice regarding Infection Control Measures in NICU among nursing personnel in selected hospitals, Tumkur, Karnataka. India. Methodology: The pre-test and post-test pre-experimental design, the samples recruited by convenient sampling technique, consist of 60 nursing personnel in selected hospitals of Tumkur, Karnataka, India. A structured questionnaire was given to assess the knowledge and practice of Infection Control Measures in NICU followed by a structured teaching programme on Infection Control Measures in the NICU and administering the same questionnaire to assess the post-test. Results: The overall mean post-test knowledge score on Infection Control Measures in Neonatal Intensive Care Unit 8.42 with the standard deviation of 1.11 was significantly higher than overall mean pre-test knowledge score on Infection Control Measures in Neonatal Intensive Care Unit 3.95 with a standard deviation of 1.84. And the obtained 't' value 16.266 was significantly higher than the table value. Regarding the practice on Infection Control Measures in NICU the overall mean posttest score was 12.35±1.54 was significantly higher than the overall pre-test mean score 3.88±1.96. The obtained 't' value 30.055 was significantly higher than the table value. There was no significant association found between the pre-test knowledge score with the demographic variable of the nursing personnel, and regarding the practice on Infection Control Measures in NICU. There was no significant association found between the pre-test practice score with the demographic variable except Experience in Neonatal Intensive care unit was significant. Conclusion: It is very important to make awareness among nursing personnel regarding infection control measures in the NICU.

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Assess the effectiveness of computer assisted teaching programme on knowledge regarding early detection of hearing impairment in infants among mothers in a selected community in Bangalore

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Abstract

Background of the study: Hearing loss is not being able to hear sound in one or both ears. Infants may have some hearing loss at birth. Hearing loss can also develop in children who had normal hearing as infants. The loss can occur in one or both ears. It may be mild, moderate, severe, or profound. Profound hearing loss is what most people call deafness. Sometimes hearing loss gets worse over time. Other times it stays stable and does not get worse. Signs of hearing loss in infants vary by age. A newborn baby with hearing loss may not startle when there is a loud noise nearby. Older infants, who should respond to familiar voices, may show no reaction when spoken to. Children should be using single words by 15 months, and simple 2-word sentences by age 2. If they do not reach these milestones, the cause may be hearing loss. Early identification followed by prompt and appropriate management can effectively reduce the impact of deafness and hearing loss on the life of an individual. Neonatal and Infant hearing screening programmers are an effective strategy for early intervention in cases of congenital and early onset hearing loss.

Objectives: To determine the effectiveness of computer assisted teaching programme on knowledge regarding early detection of hearing impairment in infants. The objectives of the study were: To assess the pre-existing knowledge regarding hearing impairment and early detection of hearing impairment in infants among the mothers staying in selected community. To develop a computer assisted teaching module for the early detection of hearing impairment in infant. To compare the pre and post existing level of knowledge on early detection of hearing impairment among the mother in a selected community. To associate the pre-test knowledge regarding early detection of hearing impairment in infant among the mothers staying in selected community with their selected demographic variable.

Methods:An evaluative approach was adopted and a pre experimental design was used for the study. Infant mothers who came to Kannalli PHC Bangalore were the samples and the sample size was 40. Infant mothers were selected by non-probability convenience sampling.

Result: The data obtained were analyzed using descriptive inferential statistics in terms of frequencies, percentages, mean, mode, SD and Chi-square 't' value. Sample characteristic in pretest revealed that 95% of mothers were inadequate knowledge; only 5% of mothers were having moderate knowledge and none of mother reported the exposure to literature on EDHI adequately. From the findings of the study it was clear that the mean posttest knowledge score 17.5 with SD of 2.28 was significantly higher than the mean pretest knowledge scores 5.67 with SD of 1.8 and computed paired 't' value 28.52 is higher than table value 2.02 at p0.05 level.

There was significant association found between the pre test knowledge score of mothers with their post test knowledge score. The study reveals that there is no significant association between selected demographic variables like age, education, religion, residential area, family income, parity, previous knowledge and source of knowledge in relation with pre-test Knowledge scores of post natal mothers at p0.05. The present study attempted to assess the effectiveness of CATP regarding EDHI and found that the developed CATP was effective in improving the knowledge of infant mothers regarding EDHI in infant and its management.

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NUSIJ-08

Effectiveness of an educational intervention in increasing knowledge regarding lung cancer among engineering students

Rahul Shil[1]

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Abstract

Lung cancer is a preventable and treatable disease yet its incidence and mortality are increasing every year due to lack of awareness and early detection. Objective: The present study aimed at determining the effectiveness of an educational intervention i.e. video-assisted teaching on knowledge regarding Lung Cancer and its management among under-graduate engineering students. Methods: The study utilized one group pretest-posttest quasi experimental research design to evaluate the effectiveness of a video-assisted teaching regarding lung cancer. A total of sixty selected engineering college students were selected for the study through a convenient sampling method. The data was collected by using structures self-reporting knowledge questionnaire regarding various aspects of lung cancer. Results: The majority of the undergraduate engineering students (63.33%) had inadequate knowledge and the reaming (36.77%) had moderately adequate knowledge and none of them was found to be with adequate knowledge in the pretest. After the intervention, the results demonstrated a considerable improvement in the knowledge level and it was substantially significant according to the paired t-test value of $t = 27.008$ at a 5% level ($p0.05$). Conclusion: Video-assisted teaching is an effective educational intervention increase the knowledge among students regarding various aspects of lung cancer.
PAGES: 01-03

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NUSIJ-09
Assess the knowledge on premenstrual syndrome among adolescent girls

Vijaya Bhandari, Kalsanglangor Tamang, **Manimegalai S**[1]
[1]Dayananda Sagar University

Abstract

Premenstrual syndrome is all the symptoms occurring before the menstruation start. Epidemiological surveys have estimated that as many as 80% of women of adolescent girls experience some symptoms attributed to the premenstrual phase of the menstrual cycle. The previous studies in India reported prevalence of PMS to be 20% in general population and severe symptoms in 8%. This study was aimed to assess the knowledge level of premenstrual syndrome with the view to develop an information booklet and find out association with the selected demographic variables among adolescent girls of Dayananda polytechnic college, Bangalore. The study is descriptive in nature which was conducted in Dayanandasagar Polytechnic College, Bangalore, Karnataka State, India. Thirty samples were selected by non-probability purposive sampling technique and a structured questionnaire was provided to collect data regarding knowledge related to premenstrual syndrome. The findings of the study which revealed that, 14(46.6%) respondents had inadequate knowledge, 10(33.3%) respondents had moderate knowledge and 6(20%) respondents had adequate knowledge on premenstrual syndrome.

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Effectiveness of Video Assisted Teaching Program on Knowledge Regarding the Impact of Junk Foods on Obesity among School Age Children in a selected School, Bangalore, Karnataka, India

Sowmya. A.V[1]

[1]Dayananda Sagar University

Abstract

Childhood obesity has escalated to an alarming proportion in the last twenty years. It is currently the most preventable nutritional disease of the 21st century. School aged children have well-defined food preferences and dislikes, preferring large amounts of sugar and starches while avoiding vegetables and protein foods. These years may signal for the appearance of obesity. This study was undertaken to evaluate the effectiveness of video assisted teaching program on knowledge regarding the impact of junk foods on obesity among school age children in a selected school at Bangalore. An evaluative approach was adopted and a quasi experimental one group pre- test post-test design was used for the study. 60 School age children (5th & 6th Standard) of DayanandaSagar International School, Bangalore were selected by simple random sampling technique. The pre-test was followed by the implementation of video assisted teaching programme and post test was conducted after 7 days using the same structured questionnaire. The results were described by using descriptive and inferential statistical analysis. Results of the study revealed that the overall post test mean knowledge score 21.31 (85.26%) were significantly higher than the overall mean pre-test knowledge scores 8.63 (34.53%) and the computed paired 't' value 34.48 is higher than the table value 3.46 at P0.001 level. The overall findings of the study clearly showed that the video assisted teaching programme was significantly effective in improving the knowledge regarding the impact of junk foods on obesity among school age children.

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NUSIJ-11

Impact of COVID-19 on Nursing and other Healthcare Professionals: Strategies forStrengthening Nursing Education, Training and Leadership

Shivaleela P. Upashe[1], **Sunaya Ghosh**[1] , **Amitha R** [1] , **Kavita Chandrakar**[1]
[1]Dayananda Sagar University

Abstract

The damage extension of the SARS-CoV-2 virus, the cause of the corona virus disease(COVID-19) outbreak that started in December 2019, was completely unexpected. The virusinfected more than 20.21 million and killed more than 737,136 people as of 10 th august 2020,leaving healthcare professionals under abnormal pressure. Although there are no estimates ofhow many are health care professionals infected, it may be 15-18% of the healthcareprofessionals and suppose a correspondingly high death count. From emergency physiciansand nurses to public health officers and psychologists, the exposure to distressing experiencespoints to a high chance of developing post-traumatic stress disorder, depression, and burnoutsyndrome. In the case of COVID-19, decisions upon scarce resources, frustration aboutpatients' outcomes, lengthened working hours, concerns regarding the family's health, andwidespread vicarious trauma are present and costly for health care professionals. Coordinatedreorganization of health and well managed social services is essential to assess and diagnose rapidly, treat patients effectively, and protect hospitals and health personnel. Thepolicymakers were thinking that investing in the nursing sector and maintaining aprofessional nursing workforce is an economic burden but now everyone is understood thatthey are especially for the wellbeing of our peoples and families. Hence it is necessary tosupport nursing professionals at the workplace and ensuring the appropriate payout is a mustalong with appropriate timely training is required to ensure the quality service. Furthermore,they should be allowed to involve in policy formulation and decision making all the time.

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BOOK CHAPTER

Research and production of second generation biofuels

Raghavendra HL, Shashank Mishra, **Shivaleela P. Upashe[1]** and Juliana F. Floriano
[1]Dayananda Sagar University

Abstract

The global demand for fossil fuels is very high, but their use is not sustainable since its reserves are declining. Additionally, fossil fuels are responsible for the generation and accumulation of greenhouse gases. Thus, renewable fuels capable of sequestering carbon dioxide are in high demand. The production of first-generation biofuels from conventional fuel crops competes with food for arable land while producing low yields. The use of food crops like sugarcane, grains, and vegetable oils as biofuels may cause a threat to the food security system. Thus, there has been a great demand for the production of second-generation biofuels, which require lignocellulosic biomass as nonedible feedstocks that can be converted to sugar from which bioethanol can be produced. The emission of greenhouse gases from the transport sector can be reduced by substituting fossil fuels by biofuels. Second-generation biofuels can utilize nonarable land and consume waste products. Research on second-generation biofuels has emerged mainly in the developed and some developing countries like India, China, and Brazil. This chapter describes research and production of second-generation biofuels. A mixture of many oxygenated hydrocarbons comprise the feedstocks. Thus, the removal of oxygen becomes a necessity for converting it to a high-quality fuel by different routes such as catalytic cracking and hydrodeoxygenation. The most significant issue of a green economy is the application of gaseous fuels obtained from lignocellulosic mass for sale, subject to the renewable fuel standard. Private industrial investments and research funds should merge for the commercial production of biofuels at a cheaper rate.

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COLLEGE OF PHARMACY
SCHOOL OF HEALTH SCIENCES
Publication Summary

International Journals	37	(PHSIJ-01 – PHSIJ-37)

PHSIJ-01

Analytical methods for the determination of Aminoglycosides Antibiotics by chromatographic technique

Islam Sofiqul[1], **V Murugan[1]** and **Prema Kumari[1]**

[1]Dayananda Sagar University

Abstract

Aminoglycosides antibiotics are considered to be the antimicrobial agents used frequently in the treatment of human diseases caused by a bacterial infection. Most of the aminoglycosides antibiotics are highly polar in nature and they are lacking the UV absorbing chromophore in the molecules. The present articles accentuate the analytical method associated with the analysis of aminoglycosides molecules. Various chromatographic techniques like liquid chromatography, gas chromatography; mass spectrometry were used for the detection of aminoglycosides antibiotics. However, due to its limitation in the ultraviolet-visible spectrophotometry (UV/Vis) technique, different types of detection techniques like corona-charged aerosol detector (CAD), electrochemical detector (ECD) were used as a most powerful and versatile technique for the demonstration of these molecules in the analytical field. Analytical methods help to ensure the quality of the drug products. This review paper is devoted to providing an overview of the key performance technique used for the application and detection of these aminoglycosides molecules.

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PHSIJ-02
Synthesis of 2- (Bis (2- chloroethyl) amino) – N - (4 - (3 - oxobenzofuran- 2 (3H) - ylidene) methyl) phenyl) acetamide derivatives on Basis of Benzaldehyde3s and Acetophenones as Possible Alkylating Anticancer Agents

Agasa Ramu Mahesh[1] and **Vedigounder Murugan[1]**
[1]Dayananda Sagar University

Abstract

A series of 2-(Bis(2-chloroethyl)amino)-N-(4-((3-oxobenzofuran-2(3H)-ylidene)methyl) phenyl)acetamide derivatives were synthesized by fusing aurones with nitrogen mustards. Aurones being synthesized by treating 4-nitrobenzaldehydes with various derivatives of 1-(2- hydroxyphenyl)ethenone. The characterization of the synthesized compounds was done by FTIR, 1H NMR and LCMS spectral studies. The titled compounds were tested for their possible anticancer activities by in vitro methods by SRB Assay. These compounds were found to exhibit a moderate anticancer activity. Keywords: Aurone, nitrogen mustard, anticancer, SRB Assay using A-549 and MCF-7 Cell lines

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PHSIJ-03

Application of total error concept in the analytical method validation for the assay of essential amino acids by Precolumn derivatization

Ramachandra Reddy Aasodi[1], **V Murugan[1]** and **Premakumari[1]**.
[1]Dayananda Sagar University

Abstract

A pre-Ultraperformance Liquid Chromatography (UPLC) column derivatization procedure was developed for the simultaneous quantification of essential amino acids (EAAs) in the solid oral dosage pharmaceutical formulation. This analytical procedure has been validated with the help of the concept of total error. The total error approach (the combination of systematic and random error) is a decision-making tool for ensuring the performance of the method. Fluorenylmethyloxycarbonyl chloride was used as a derivatization reagent. The amino acid derivatives were separated on a C18 column (internal diameter 2.1 × 100 mm, 1.6 μm) by gradient elution with 0.1% trifluoroacetic acid and acetonitrile:water (90:10, v/v), respectively, as mobile phase A and B. About 10 EAAs could be detected at 265 nm in 35 minutes with a flow rate of 0.25 ml/min. The linearity range of each amino acid was between 0.1 and 1.0 mg/ml. The accuracy and risk profiles were considered acceptable across the range. The precolumn derivatization procedure and the concept of the validation of total error could be used as an appropriate strategy to demonstrate the suitability of the analytical procedure for the separation and evaluation of EAA in solid oral dosage formulations.

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PHSIJ-04

Synthesis and evaluation of some newer Pyrazolines as possible potential antitumor agents

Kalpana Divekar[1], Shivakumar Swamy, **V Murugan[1]**
[1]Dayananda Sagar University

Abstract

Worldwide data states that on an average 14.1 million people are diagnosed to be cancer patients and the number may reach 24 million by 2035 and major cause of death may be related to cancer. The research in the area of chemotherapy is of continuous interest for medicinal chemists as the chemotherapy suffers from major drawback of causing side effects. Moreover many molecules which are used in cancer do not exhibit target specificity. In view of this the search for new chemotherapeutic agents continues to be an active area of research. Among nitrogen containing heterocyclic compounds pyrazolines demonstrate various types of biological activities including cytotoxic activity. This work is aimed at synthesis of some pyrazole derivatives, their characterization and evaluation of their anticancer activity. Out of the ten compounds prepared it was found that two compounds have significant antitumor properties.

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PHSIJ-05

Improvement of related compound analytical method in Amikacin by High Performance liquid chromatography

Islam Sofiqul[1], Murugan V[1] and **Premakumari K B.[1]**
[1]Dayananda Sagar University

Abstract

Amikacin is an antibiotic worn in the treatment of bacterial infectious diseases. An easy chromatographic technique was evaluated for the fortitude of the related compound. Newly improved method attained through isocratic elution on X bridge C_{18} (250 x 4.6mm, 5μm) column at 30 ^{0}C using a mobile phase consisting of phosphate buffer and methanol (70:30v/v) with a flow of 1.0 mL/min. The UV detection was carried at 340nm. The analytical execution of the new method was validated as per International council for Harmonization (ICH) guideline.

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PHSIJ-06
Phytochemical and GC-MS analysis of Ziziphus rugosa bark

Manjunath E[1], Murugan Vedigounder[1], Geetha KM[1], R Nandeesh
[1]Dayananda Sagar University

Abstract

The plant kingdom has many species of plants with lot of medicinal value which are yet to be discovered and large numbers of plants are constantly being screened for their phytochemical and pharmacological value in addition to the already exploited ones. *Ziziphus rugosa* is one of the wild plant belonging to the family Rhamnaceae, traditional claims reported that it is used in the treatment of ulcer, as astringent and as antidiarrhoeal. The plant bark is also proved for its antidiabetic, antifungal, analgesic and anti-inflammatory activities. However, there has been no report on the active components of this plant. The objective of the present study is to evaluate the phytochemical and GC-MS analysis of the *Ziziphus rugosa* bark. From phytochemical screening, ethanolic extract of bark was found to be rich in phytochemicals, flavonoid content (91.24±4.624 mgQEg−1) and phenolic content (493.42±8.23 mgGAEg−1). Fifteen compounds were identified from GC-MS analysis with proved pharmacological activity. These results suggest that *Z. rugosa* bark can be subjected to isolation, purification and characterization of the promising molecules responsible for the activity of this plant.

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PHSIJ-07
E-Pharmacies: An Emerging Market in Indian Retail Pharmacy, An Indian Perspective,

Agasa Ramu Mahesh[1], Vimal John Samuel[1], Sourav Bag[2] **Pavan Kalyan BG[1]**
[1]College of Pharmaceutical Sciences, Dayananda Sagar University

Abstract

A steep increase in the netizen population in India has regarded revolutionary changes in the field of retail pharmacy in last few decades. The change in prescribing methods have been seen. The diversification in the strategies of pharmaceutical retail marketing have been observed which in turn has resulted in enhancement and speeding up the reach of drugs to the patients in time. It is been inferred that the age groups of students and younger patients would be more likely than others to obtain medications via online pharmacies due to their familiarity with the Internet. An online survey was been done using google forms regarding the use of e-pharmacies and it was found highly recommended by the age group of 18-35. In this article we have made an effort to create awareness of using e-pharmacies, its pros and cons and the precautions to be taken while using e-pharmacies by the public.
Keywords: E-Pharmacy, Survey, Prescribing patterns, Retail marketing,

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Synthesis of 2-(Bis(2-chloroethyl)amino)-N-(4-((3-oxobenzofuran-2(3H)-ylidene)methyl)phenyl)acetamide Derivatives on Basis of Benzaldehydes and Acetophenones As Possible Alkylating Anticancer Agents

Agasa Ramu Mahesh[1], **Vedigounder Murugan[1]**
[1]Department of Pharmaceutical Chemistry, College of Pharmaceutical Sciences, Dayananda Sagar University, Bengaluru

Abstract

A series of 2-(Bis(2-chloroethyl)amino)-N-(4-((3-oxobenzofuran-2(3H)-ylidene)methyl)phenyl)acetamide derivatives were synthesized by fusing aurones with nitrogen mustards. Aurones being synthesized by treating 4-nitrobenzaldehydes with various derivatives of 1-(2- hydroxyphenyl)ethenone. The characterization of the synthesized compounds was done by FTIR, 1H NMR and LCMS spectral studies. The titled compounds were tested for their possible anticancer activities by in vitro methods by SRB Assay. These compounds were found to exhibit a moderate anticancer activity. Keywords: Aurone, nitrogen mustard, anticancer, SRB Assay using A-549 and MCF-7 Cell lines

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An Overview Of Computational Docking In Drug Discovery

M. Gnana Ruba Priya[1] , Hemanth [2], **Chinju Susan Chacko**[1] and **Shravya Lakshmi S**[1]
[1]Dayananda Sagar University

Abstract

Molecular docking is one of the most frequently used methods in structure-based drug design[1], due to its ability to predict the binding-conformation of small molecule ligands to the appropriate target binding site This article has basic information on molecular docking, Characterisation of the binding behaviour plays an important role in rational design of drugs as well as to elucidate fundamental biochemical processes. Molecular docking software mainly used in drug development. molecular modeling[3], types of docking, molecular docking models, basic requirements of molecular docking, molecular approach, applications, evaluation and software available for molecular docking such as DOCK, ICM, FleX, Hammerhead, MCDock, Surflex, SLIDE, AutoDock, GemDock, Gold, Glide.

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PHSIJ-10
Prescribing Pattern Among Out Patients Of Department Of Obstetrics And Gynaecology In A Tertiary Care Hospital

Chinju Susan Chacko[1], Nandakumar U.P[2], Sharad Chand [2] , **Shravya Lakshmi** S[3]. , M. **Gnana Ruba Priya**[4] , Abhinaya M.[5] , Sara V.S[5]. and Lihorila L. Sangtam[5]

[1]Department of Pharmacy Practice, College of Pharmaceutical Sciences, Dayananda Sagar University, Bangalore, Karnataka, India [2]Department of Pharmacy Practice, NGSM Institute of Pharmaceutical Sciences, Nitte (Deemed to be University), Deralakatte, Mangaluru, Karnataka, India [3]Department of Pharmaceutics, College of Pharmaceutical Sciences, Dayananda Sagar University, Bangalore, Karnataka, India [4]Department of Pharmaceutical Chemistry, College of Pharmaceutical Sciences, Dayananda Sagar University, Bangalore, Karnataka, India [5]Department of Pharmacy Practice, Karavali College of Pharmacy, Mangaluru, Karnataka, India *Corresponding author Email: chinjususan92@gmail.com

Abstract

Drugs used in pregnancy are one of the top-selling drugs in India. However, there are only minimal studies conducted to evaluate the utilization of such drugs. Thus the present study was undertaken to analyze drug usage pattern and to identify potential drug-drug interactions in the prescriptions of the out-patient department of OBG in a tertiary care hospital. To analyze the drug usage pattern among the outpatients of the OBG department in a tertiary care hospital. A prospective observational study was conducted for a period of six months. During the study period, a total of 200 prescriptions were analyzed. Details including patient demographics and medications prescribed were noted in the specially designed data collection form. From the prescriptions, the potential drug-drug interactions were identified by using Micromedex software. A total of 200 prescriptions were analyzed. The mean age of patients was 26.13 ± 5.74 years. Most of the pregnant women in the 1st and 2nd trimester were found to be in the age group of 25-31 years. The average number of drugs prescribed per prescription was found to be 1.58. Iron and folic acid preparation was found to be the highest prescribed medication 153 (48.26%). Out of 200 prescriptions analyzed, 197 (98.5%) had no significant drug-drug interactions present while 3(1.5%) prescriptions had one drug-drug interaction each. The prescribing pattern observed in the current study can be considered as a good example to educate healthcare professionals on the importance of rational use of drugs during pregnancy.

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PHSIJ-11
Cisplatin-Induced Peripheral Neuropathy: An Observational Descriptive Study

Anjol Kurian[1], Bittu Babu [1], Benson Punnoose [1], **Chinju Susan Chacko**[2], Mallikarjuna Rao [3], Sharad Chand,[1] Vinay B[1] C, Nandakumar U. P[1]
[1]Dayananda Sagar University

Abstract

Peripheral neurotoxicity is a major adverse effect of cisplatin chemotherapy. A prospective observational study was conducted among 200 cancer patients who received cisplatin between October 2017 and March 2018 to evaluate the occurrence, causality and severity of cisplatin induced peripheral neuropathy. A suitable data collection form was used to record patient information required for the study. Peripheral neuropathy was assessed using the National Cancer Institute- Common Terminology Criteria for Adverse Events (NCI-CTCAE). As per the results, 19 (9.5%) patients developed peripheral neuropathy after receiving cisplatin therapy. Peripheral neuropathy was reported higher in males (84.2%) compared to females (15.7%) and more within the age group of 58-65 years (38.6%). Most of the patients developed Grade I neuropathy (84.2%), followed by Grade II neuropathy (15.7%). The study concluded that the severity of peripheral neuropathy increases with higher cumulative doses of cisplatin.

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PHSIJ-12
A Review On Covid-19 Outbreak – An Update On The Status

M. Gnana Ruba Priya[1] , **Shravya Lakshmi S**[1] , **Chinju Susan Chacko**[1] and **Bincy Raj**[1]
[1]Dayananda Sagar University

Abstract

The COVID is a large family of dreadful viruses known to cause illnesses ranging from the common cold to acute respiratory tract infection. The severity of the infection may be visible as pneumonia, acute respiratory syndrome, and even death. The epidemic of coronavirus disease 2019 (COVID-19), originating in Wuhan, China, has become a major public health challenge for not only China but also countries around the world. On December 31, 2019, mysterious cases of pneumonia were detected in the city of Wuhan in China's Hubei Province. On January 7, 2020, the causative agent was identified as a new coronavirus (2019-nCoV), and the disease was later named as COVID-19 by the WHO. There are no treatment options available for the virus as such, limited to the use of antiHIV drugs and/or other antivirals such as Remdesivir and Galidesivir. For the containment of the virus, it is recommended to quarantine the infected and to follow good hygiene practices. The most common symptoms of COVID-19 are fever, tiredness, and dry cough, a small population of patients appeared gastrointestinal infection symptoms and asymptomatic cases also causes corona virus. In this article, we propose a brief review of the literature in relation of this new pathogen and its disease.

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PHSIJ-13
A Review On Microwave Assisted Synthesis Of Some Nanoparticles

M. Gnana Ruba Priya* [1], **Bincy Raj**[2] and Rashmi T.[3]

[1,2]Department of Pharmaceutical Sciences, Dayananda Sagar University, Bangalore
[3]Department of Pharmaceutical Sciences, Bharathi college of pharmacy, Mysore.

Abstract

Microwave-assisted synthesis is popular in areas ranging from biochemical processes to nanotechnology .Chemical reactions are often faster than traditional reflux condenser heating methods, and have higher yields and fewer side products. Current microwave reactors provide excellent control over reaction mixing, withstand high temperatures and pressures, and demonstrate exceptional reproducibility from reaction-to-reaction. Speed and efficiency are aided by the direct heating of the reaction mixture, heating solvents beyond their boiling points at high pressure, and uniform heating profiles. In this review paper, the colloid of silver (Ag), gold (Au), platinum (Pt), and gold–palladium (Au–Pd) nanoparticles has been prepared by a low cost microwave technique where microwave radiation was used as a heating source. Compared to a thermal heating method, microwave radiation gave a much faster reaction. MW-assisted methods have been employed for the convenient and reproducible synthesis of well-defined noble and transition core–shell metallic nanoparticles with tunable shell thicknesses. Some of the distinctive attributes of MW-selective heating in the synthesis and applications of magnetic nanocatalysts in organic synthesis under benign reaction conditions are highlighted. Sustainable nanomaterials and their applications in benign media are an ideal blend for the development of greener methodologies in organic synthesis; MW heating provides superb value to the overall sustainable process development via process intensification including the flow systems.

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PHSIJ-14
Comprehensive Study on Docking Analysis of Phytoconstituents

Anita A., **Kalpana Diwekar**[1] and **Geetha K. M.**[1]
[1]College of Pharmaceutical sciences, Dayananda Sagar University, Bangalore

Abstract

The process of drug discovery involves technical and prolonged procedures to find a perfect lead molecule and compels us to source newer methods discovering biological targets by the knowledge of computational tools, molecular docking which is a part of molecular biology and CADD offers the solution, The review aims a brief write up on usage of molecular docking for various screening of compounds and hypothesis of ligand binding with receptor complex to form a stable complex and finally through 3d conformation get a perfect lead optimization which is targeted mainly on phytoconstituents. The computational technique to find out a

special arrangement with the help of a software to pedict a ligand –receptor complexes having minimum energy, maximum specificity and efficacy is also called *in silico* approach. As the study of phytoconstituents is still under explored therefore it's an effort to co-relate and encourage research based on it.

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PHSIJ-15
Enthanopharmacological Approaches to Pathophysiology of Delayed Wound Healing using Traditional Phytoconstituents

Anita A., **Kalpana Diwekar[1]** and **Geetha K. M[1]**
[1]Department of Pharmaceutical Sciences, Dayananda Sagar University, Bangalore

Abstract

A large number of plants are used by traditional medical practitioners in many countries for the treatment of wounds and burns. These natural agents induce healing and regeneration of the lost tissue by multiple mechanisms. Records shows that different parts of plants are used for Delayed wound healing contain some active principles or components that are antimicrobial, anti-inflammatory and antioxidant in function. The phytomedicines are not only cheap and affordable but also safe. The present review is an attempt to highlight various ethno-medicinal plants in the management of wounds and involved mechanism of action.

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PHSIJ-16
Product quality by process analytical technology and quality by design- A short communication

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Abstract

A Systematic approach which is based on scientific knowledge and concept of quality risk management which leads to development which emphasizes on process and product undertaking an starts with a predefined objectives is usually called as QBD, which now aims at pharmaceutical development to design a quality product and the entire manufacturing process aiming to produce according to the standard and specifications to consistently deliver product intended, the knowledge is purely base on scientific approach, QbD is not only limited to production but is also extended to analytical procedures and methodology, the article relates to a short communication about A QBD its approach, history and its basic elements. The product procedures now need to comply till the end of the entire procedure s rather than only at the beginning and that's where QbD plays important role throughout the method life cycle also it give added advantage is to include the procedure to discovering and minimizing the sources of viability which may lead to inferior quality and procedure and products.

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PHSIJ-17

QBD, Review on Comprehensive Understanding Of Building An Analytical Quality By Design For Drug Manufacturing Process

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Abstract

The performances can be improved as well as clearly understood along with the risk management and desired performance methods which can also be validated later on, the review briefly gives an inside view of application of analytical QBD in industries and its current status with examples and principles of analytical methods in HPTLC ,titration for moisture content, determination of toxic impurities in mixtures,quantative colour measurement and various spectroscopic method for identification of chemical moiety. Qbd developed spectroscopic and chromatographic method are usually done as per ICH Q8 R2 , the critical parameters are compared to principle observation and analysis, the HPTLC method employs solvent usage and detection of absorbance and wavelength comparison.

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PHSIJ-18

A Study on the Assessment of Adverse Drug Reactions of Tyrosine Kinase Inhibitors and Their Impact on Quality of Life in Solid Organ Malignancy Patients

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Abstract

Background: Targeted therapy such as TKIs have prominent application in treatment of solid organ malignancies due to their effective response associated with changes in HRQoL scores during treatment and correlation of ADRs with medication adherence. **Objectives**: The aim of the present study is to assess the Adverse Drug Reaction of Tyrosine Kinase Inhibitors and their impact on Quality of Life in Solid Organ Malignancy Patients. **Methodology**: 33 patients with solid organ malignancies on TKIs were included in this prospective, observational and analytical study conducted in the day care wards and in-patient department of Sri Shankara Cancer Foundation Hospital and Research Centre, Bengaluru, India. **Results**: Out of 33 volunteers, 23(69.7%) were males and 10(30.3%) were females. In addition, the highest percentage of patients with an average age group was 65.91±2.98 years. Overall 17(51.51%) had NSCLC, 12(36.36%) with HCC and 4(12.12%) patients were presented with GIST. Further 69.69% of the patients

reported of having one or more ADRs. The commonly occurring ADRs were Rashes (18.60%) followed by Emesis (13.95%), Anorexia and Constipation (11.63%). The patients showed variable clinical characteristics and improved overall quality of life. The functional scales has improved except financial burden, which was increased in all solid organ malignancy subjects consequently due to the high cost of treatment. Symptoms such as dyspnoea, coughing, sore mouth, dysphagia have gradually reduced whereas haemoptysis, peripheral neuropathy fatigue, insomnia were worsened in first month but got improved by third month. **Conclusion**: The TKIs showed minimal ADRs and significant functional improvement in health status during the course of treatment.Our findings suggest that changes in HRQoL scores from baseline during treatment, as measured on subscales of the EORTC QLQ-C30 and QLQ-LC13, HCC18 and STO22 are significant prognostic factors for survival.

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PHSIJ-19
A Prospective study on Assessment of Acceptance and Functional Capacity of Chronic Kidney Disease Patients in Tertiary Care Hospital

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Abstract

Introduction: Chronic kidney disease (CKD) is a type of kidney disease in which there is gradual loss of kidney function over a period of months or years.As there is a continuous rapid rise in the prevalence of various chronic diseases due to poor knowledge and adherence to management, there is a need to improve knowledge to improve quality life and preserve functioning and slow down the process rapid progression into end stage and thus prevent complications.
Objectives: (1) To assess and evaluate acceptance of patients regarding their condition in various stages of CKD by Illness Cognition Questionnaire (ICQ). (2) To evaluate the self-sufficiency and functional capacity of CKD patients by Karnofsky Performance Status (KPS).
Method: A prospective, observational study was conducted on patients in both inpatient and outpatient Department of Nephrology Sagar Hospitals, Bengaluru for a period of 6months. A total of 100 were patients were enrolled based on inclusion criteria, their demographic details such as age, gender and creatinine levels were collected and interviewed to score the ICQ and KPS questionnaires. Patients were followed up and re-interviewed after a time interval of 2months after giving patient counseling regarding management and maintenance of the disease and re-scored for ICQ.

Results: A total of 100 patients were included in the study based on the inclusion and exclusion that were assessed for functioning capacity by Karnofsky Performance Status Scale questionnaire, it had 3 main categories with sub scoring under each category. Patient distribution in Category A (30%), Category B (54%) and Category C (16%). The total study population was interviewed and pre scores of helplessness, acceptance and perceived benefits for ICQ were given before counseling. Out of the total study population 64 patients were again scored after counseling to obtain post scores. Acceptance and perceived benefits was found to have a significant increase in patients before and after counseling (A: P=.0.0001) and (PB: P=.0.0001), but no significant difference was seen in helplessness among the patients (H: P=0.2671).Conclusion: This study concluded that impact of pharmacist interventions by means of patient counseling improved the quality of life in CKD patients.

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PHSIJ-20

A Study of antibacterial utilization pattern in a tertiary care hospital

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Abstract

Objectives: The objective of the study was to analyze the utilization pattern of antibacterials in a tertiary care hospital.

Methods: A cross-sectional, prospective, observational study was conducted on patients admitted in inpatient departments of a tertiary care hospital for 6 months.

Results: In the study, 152 prescriptions being assessed contained 17.2% antibacterials. The most commonly prescribed drug class among antibacterials was β-lactams (50%). Ceftriaxone and amikacin (10.58%) were the highly prescribed antimicrobials. Maximum number of antibacterials were prescribed as monotherapy and given as parenteral dosage forms. Among the fixed-dose drug combinations, the most commonly used combination was Cefoperazone + Sulbactam (10.58%).

Conclusion: This study highlighted an overall pattern of antibiotic prescription in a tertiary care hospital. The most common infection for which the antimicrobials were prescribed was lower respiratory tract infection. Physicians preferred initiating prophylactic treatment than waiting for culture sensitivity test results. The most common antimicrobials prescribed were ceftriaxone and amikacin. Maximum number of prescriptions contained only one antimicrobial which is a favorable observation. Majority of prescriptions contained brand name which needs to be changed by an intervention.

KEYWORDS: Antimicrobial resistance, Ceftriaxone, Amikacin, Cefoperazone,

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PHSIJ-21
A Study of the Possible Drug-Drug Interactions in Medicine Unit of A Tertiary Care Hospital

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Abstract

An interaction is said to occur when the effects of one drug are altered by the co-administration of another drug, herbal medicine, food, drink or other environmental chemical agents. This study was designed to analyze the possible drug-drug interactions in the medicine department of a tertiary care hospital. A prospective study was conducted on inpatients admitted to the medicine department of a tertiary care hospital for a period of 6 months. The patient demographics, diagnosis and drugs prescribed were recorded and presence of possible drug-drug interactions were detected using standard databases. Out of 60 cases collected, 36(60%) and 24(40%) were men and women respectively, where interactions were seen in 47% of male patients and 50% of female patients. A total of 682 drugs were prescribed at an average of 11 drugs per prescription. A total of 665 possible interactions were reported. Major interactions were 36 (5%) and moderate interactions were 550 (83%). Aspirin had the highest number of interactions with involvement in 65 types of moderate and 6 types major interactions. As per the study, among the top 5 drug combinations involved in drug-drug interactions, Aspirin+ Insulin combination was found to have the highest prevalence (36%). The study observed increased number of possible interactions with increase in number of drugs/prescriptions. This study reported a total of 665 interactions. Aspirin was involved in most of the drug interactions. Aspirin and Enoxaparin was the most frequent interacting drugs. Keywords: Drug interactions, Aspirin, Insulin, Enoxaparin, prescription.

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Natural Polysaccharides: An Overview of their Role in the Development of Microparticles for Stomach Targeting

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Abstract

Development of safe and efficacious gastro-retentive dosage forms for stomach specific drug delivery have profound importance in pharmaceutical industry. Different approaches used for gastro retention are discussed with a special focus on the floating drug delivery systems. Natural polymers have great demand in drug delivery as they encompass polymers with many functional groups, wide range of molecular weights, varying chemical composition, for the most part, low toxicity and biodegradability yet high stability. Most of these polymers have been approved by many regulatorybodies all over the globe for their usage as pharmaceutical excipients; hence, their adoptability in formulation and development is hassle free. Natural polysaccharides have been investigated for drug delivery as well as biomedical applications. This review provides an overview of different stomach specific natural polymers used or currently being used specially for controlled drug delivery and the advantages of microparticles for stomach specific drug delivery including their preparation methodologies etc. The review also emphasizes a brief summary of existing challenges associated with microparticles as delivery system for targeting drugs in the stomach and alternative methods/solutions adopted to overcome the same down the years.

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PHSIJ-23
Amlodipine Exhibits Cardioprotective Effect of Doxorubicin Induced Cardiotoxicity in Rats

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Abstract

The protective effects of amlodipine and carvedilol on DOX induced cardiotoxicity were investigated in albino wistar rats by measuring the enzymatic, non-enzymatic antioxidant levels, serum enzyme levels and study of ECG alteration. Cardio toxicity was induced on 7th day (DOX 50 mg/kg ip) for different groups of animals. The rats were divided in to 4 groups (n=6), Group-I normal control, group-II DOX (50 mg/kg ip), group-III Amlodipine (10 mg/kg oral) + doxorubicin (50 mg/kg ip) and group-IV carvedilol (3mg/kg oral) + doxorubicin (50 mg/kg ip) for 10 days. On 11th day rats were anaesthetised (ketamine100mg/kg ip), and ECG was measured using power lab software. Blood samples were collected by retro orbital plexus and the obtained serum was used for the estimation of CK, CK-MB, LDH, calcium. The rats will be sacrificed by ketamine over dose and the heart tissue was isolated and PMS was prepared from its portion. From the PMS SOD, catalase, GSH, LPO were estimated. The remaining portion was used for histopathology study. The results of this study reveals that there are increased level serum and tissue biomarkers in DOX amlodipine and carvedilol treated rats and tissue biomarkers level had decreased in DOX induced cardio toxicity. The animals treated with Amlodipine and Carvedilol showed decrease level of serum biomarkers. The tissue antioxidant level has increased. Further, ECG and Histopathological study showed significant improvement in amlodipine and carvedilol when compared to DOX treated rats.From the results of the study it is concluded that amlodipine and carvedilol has showed cardioprotective effect on DOX induced cardiotoxicity in rats.Key words: Amlodipine, carvedilol, DOX (doxorubicin), ECG (electrocardiogram), cardioprotective.

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PHSIJ-24

Pharmacognostic and Preliminary Phytochemical Screening of Ampelocissus indica including Antioxidant Activity

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Abstract

Ampelocissus indica is tuberous plant. It has many reported traditional uses like used for dyspepsia, gout, health tonic, ulcer, indigestion, hepatitis etc. Present study focuses on standardisation of Ampelocissus indica on the basis of morphological, microscopical, physical evaluation, phytochemical investigation and antioxidant activity. From preliminary phytochemical screening it is found that methanolic extract of Ampelocissus indica is having many important phytoconstituents like alkaloids, flavonoids, phytosterols, tannins, phenolic compounds and carbohydrates. The antioxidant activity was estimated by using 2, 2- diphenyl-picryl-hydrazyl (DPPH) free radical assay. And it is found that Ampelocissus indica is having strong antioxidant activity. Total phenolic content was measured by Folin-Ciocalteau (FC) by using Tannic acid as the calibration standard. In the DPPH radical scavenging assay, the IC50 value of the extract was found to be 20μg/ml. The total phenolic content was measured by Folin-Ciocalteau was found to be 2.5 for tannic acid. In the present study morphological evaluation, microscopical evaluation, physical evaluation and chemical evaluation is done along with antioxidant studies. These standardization parameters will be helpful for identification of this endangering plant.

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PHSIJ-25
Emerging Role of Herbal Medicines in Health Care and Disease Management

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Abstract
Health and disease are different aspects of living which are interrelated to each other. Health can be achieved by constant persistent efforts by an individual whereas disease reminds us of importance of being healthy.

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PHSIJ-26
Preliminary phytochemical investigations and antiepileptic activity of *Trema orientalis* (linn.) Extracts

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Abstract
Objective: The antiepileptic potential of the petroleum ether (PETO) and methanolic extracts (METO) of the whole plant (roots, leaves, stem, and bark) of Trema orientalis (family: Ulmaceae) was evaluated using different experimental models of epilepsy in rats and mice. Materials and Methods: The anti-epileptic activity of the PETO and METO was evaluated using Picrotoxin, Isoniazid, and NMDA induced convulsion models. The brain GABA was also estimated in Picrotoxin induced convulsion model. The amount of the Lupeol present in PETO was estimated by HPTLC. Results: Preliminary phytochemical screening of the extracts revealed the presence of phytosterols, triterpenoids, Fixed oils & Fats, Tannins, phenolics, flavonoids, and carbohydrates. The anti-epileptic activity of PETO and METO at doses of 250 mg/kg and 500 mg/kg showed a significant increase (p<0.001) in the onset of convulsions in the models used. The extracts also showed a significant increase in the brain GABA levels in the doses used. The amount of lupeol present in PETO was estimated to be 8.76 µg/ml. Conclusion: The PETO and METO showed significant anti-epileptic activity in the doses used mediated through an increase in the brain GABA levels

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PHSIJ-27
Contemporary updates on the Physiology of Glucagon like Peptide-1 and its agonist to treat Type 2 Diabetes mellitus

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Abstract

Pathogenesis of diabetes mellitus involves scores of different factors, out of which Glucagon like factor-1 (GLP-1) plays a foremost role. GLP-1 is a peptide-hormone of the incretin system. It exhibits glucagonostatic as well as glucose dependent insulinotropic action. GLP-1 augments regeneration of β-cell, boost secretion of insulin and trim down weight gain in type-2 diabetes. GLP-1 discharge from the L cells of intestine is mediated by neural and hormonal factors which are stimulated by the occurrence of nutrients in the gastrointestinal tract. Conversely, GLP-1 is instantaneously shattered by enzyme dipeptidyl peptidase-IV. GLP-1 is also cleared by renal clearance. Diminished GLP-1 leads to attenuated insulin release leading to type-2 diabetes. Substitution of GLP-1 regularizes the insulin release and prevents type-2 diabetes. However, GLP-1 holding infinitesimal plasma half life limits its therapeutic effects. To surmount the limitations of indigenous GLP-1, several GLP-1 receptor agonist like Exenatide are been developed. Modifications in pharmaceutical formulation are also been made to meet the patients adherence to the medication of GLP-1 agonist.

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PHSIJ-28

Soluble Epoxide Hydrolase: A pharmaceutical Target for inflammation. Research journal of Pharmacy and Technology

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Abstract

Chronic inflammation is one of the major contributing factors for human morbidity and corresponding treatment options are most important concern to alleviate human suffering. To reduce inflammation, the existing classical available drugs target cyclooxygenase and lipoxygenase pathways. However, these treatment options are associated with side effects warranting the need for newer treatment options. Currently, inhibition of soluble epoxide hydrolase (sEH) remains one of the most favourable targets to develop anti-inflammatory drugs. By increasing epoxyeicosatrienoic acids (EETs) levels and reducing dihydroxyeicosatrienoic acids (DHETs) levels, inhibitors of sEH show an effective biological activity. Increase in the level of EETs exhibit therapeutic potentials for several diseases associated with inflammation. Soluble epoxide hydrolase inhibitors are reported to manage inflammation, hypertension, diabetes, stroke, dyslipidemia, pain, immunological disorders, eye diseases, and neurological diseases. This review will focus on the inhibition of sEH and its role in reducing inflammation.

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PHSIJ-29
Neurotherapeutic applications of nanomedicine for treating Alzheimer's disease

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Abstract

Alzheimer's disease (AD) is a progressive, irreversible, fatal brain disease which disturbs cognitive functions. It affects 35 million people worldwide and the number of people suffering may increase to 100 million by 2050 if no effective treatments are available. The present treatment improves cognitive functions and provide temporary symptomatic relief, but do not stop or delay the disease progression. Moreover, they are mainly available as conventional oral dosage forms and these conventional oral medications lack brain specificity and also produce side effects which leads to poor patient compliance. Brain drug targeting by nanomedicines is a promisingapproach to improve brain targeting specificity, brain bioavailability and patient compliance. The present review discuses about the currently available pharmacotherapy for AD and the neurotherapeutic applications as well as the advancements of nanomedicine for treating AD. It also highlights the recent advancements of variousnanomedicines containing phytopharmaceuticals for treating AD. It is believed that nanomedicines containing approved drugs can be transformed into the clinics hence improve the life style of AD patients.

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PHSIJ-30
Albumin nanoparticles coated with polysorbate 80 for the targeted delivery of antiepileptic drug levetiracetam into the brain

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Abstract

The aim of the study was to target levetiracetam (LEV) into the brain by albumin nanoparticles. The levetiracetam loaded albumin nanoparticles (LEV-NPs) were formulated by desolvation. The particle size of LEV-NPs was 153.7 ± 44.8 nm and the zeta potential was -10.8 mV. The *in vitro* LEV release, in pH 6.8 phosphate buffer, was determined by dialysis and showed a biphasic pattern of drug release and ranged in between 40.42 ± 2.6 %w/w and 63.61 ± 2.12 %w/w. The biodistribution study was conducted on male Wistar rats. The LEV was given as i.v. injection in tail vein and the formulations were the free drug, LEV-NPs and levetiracetam loaded albumin nanoparticles further coated with 1% polysorbate 80 (LEV-NPs-PS 80). A significant increase in LEV concentration was achieved in the brain for LEV-NPs-PS 80 when compared with LEV free drug.The LEV concentration achieved in the brain after administering free drug and LEV-NPs-PS 80 was 5.28 ± 1.79 and 18.54 ± 2.38 μg/gm respectively. The LEV-NPs-PS 80 enhanced LEV concentration in the brain by 3.51-fold when compared with the free drug.

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PHSIJ-31
Pharmacognostical Studies and Isolation of an alkaloid from Barleria cristata Linn. roots

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Abstract

The present investigation was carried out to study the histological characters of the roots of the plant *Barleria cristata Linn*. Further the phytochemical studies on the methanolic extract of roots revealed the presence of alkaloids. Column chromatography of methanolic extract of *Barleria cristata Linn*. roots (MEBC) was carried out by using silica gel (60-120#) column chromatography. It was eluted by different solvents in their increasing order of polarity. Fraction No.11 was purified by fractional crystallization to yield 55mg of brown coloured amorphous powder of Compound-I which was characterized and confirmed as Ibogamine by TLC, melting point, Infrared Spectroscopy, 1H NMR, 13C NMR and Mass spectrometry. Ibogamine, an alkaloid was isolated from the roots of Barleria cristata Linn. roots.

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PHSIJ-32
Transdermal delivery of an effective anti-inflammatory drugs for pain management in arthritis

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Abstract

Objective: The current research work has been carried out with the aim to develop a transdermal gel formulation of fenoprofen (a nonsteroidal anti-inflammatory drug used to treat pain associated in arthritis) which would overcome the gastrointestinal-related problems associated with oral administration of the drug. The present study aims at formulating transdermal gels using different concentrations of Carbopol, hydroxypropyl methylcellulose (HPMC), sodium alginate, and guar gum. Methods: The formulated gels were subjected for various evaluation tests such as clarity, homogeneity, viscosity, drug content, pH, spreadability, and in vitro permeation studies. Drug–polymer interaction was studied by Fourier transmission infrared (FTIR) and differential scanning calorimetry (DSC). The in vitro permeation studies were performed in phosphate buffer 7.4 using Franz diffusion cell. Results: The FT-IR and DSC studies showed no chemical interaction between drug and polymers used. All the formulated gels showed acceptable physical properties with respect to clarity, homogeneity, viscosity, drug content, pH, and spreadability. Among all the gel formulations, Carbopol gels containing fenoprofen showed good drug release compared to HPMC, sodium alginate, and guar gum. Optimized formulation was further subjected to kinetic studies which showed Higuchi model of drug release. The same formulation showed significant anti-inflammatory and analgesic activity, tested in Wistar albino rats. No signs of erythema, edema, flushing, and papules were observed when skin irritation test was performed. Stability studies under accelerated condition showed satisfactory results for the optimized formulation. Conclusions: Thus, it was concluded from the results that the optimized formulation showed controlled and slow drug delivery. Animal studies were significant at p0.05 and 0.001. The selected formulation was stable at various ambient temperatures.

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PHSIJ-33

Formulation and Evaluation of Nutritional Formulation by ICP-OES (Inductively Coupled Plasma-Optical Emission Spectroscopy) Technique to Combat Malnutrition

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Abstract

Objectives: The present study aims to formulate and evaluate a parenteral nutritional formulation that is used to combat malnutrition. The product was also assessed for the specific limit, to maintain the quality of the product so that the product is safe for the human consumption. Methods: The current study mainly focuses on analysis of concentration of Sodium (Na), Potassium (K), Magnesium (Mg) and Calcium (Ca) in amino acid compartment of nutritional formulation with the help of Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES). In this system, the solution was first nebulized and then heated at high temperature in plasma where it was decomposed into excited atoms and ions. These excited atoms and ions of each element emit a characteristic electromagnetic radiation in UV and visible wavelength. The intensity of this radiation at a chosen wavelength was proportional to the concentration of the elements in the solution. Thus Na, Ca, K and Mg present in amino acid compartment were quantified by comparison with calibration curves obtained from working standards. Results: As per ICH-Q2 R1 guidelines, the results of various validation parameters such as linearity, accuracy and specificity of the system were analyzed. The regression co-efficient value for linearity was found to be 0.9995, the accuracy and specificity were found to be in the range of 98-102%, respectively. Conclusion: The results concluded that the formulated nutritional formulation passed all the system suitability criteria and there by the product could be used to combat malnutrition.

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PHSIJ-34
Enthanopharmacological approaches to pathophysiology of delayed wound healing using traditional Phytoconstitutents

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Abstract

A large number of plants are used by traditional medical practitioners in many countries for the treatment of wounds and burns. These natural agents induce healing and regeneration of the lost tissue by multiple mechanisms. Records shows that different parts of plants are used for Delayed wound healing contain some active principles or components that are antimicrobial, anti-inflammatory and antioxidant in function. The phytomedicines are not only cheap and affordable but also safe. The present review is an attempt to highlight various ethno-medicinal plants in the management of wounds and involved mechanism of action.

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PHSIJ-35

QBD,Review on comprehensive understanding of building an analytical quality by Design for manufacturing process

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Abstract

When knowledge based on pure scientific understanding and quality risk management is applied to product and process learning with regulation on process control along with a systematic approach for development of predefined objectives in analytical field then it is called as quality by design or QBD it follow ICH guidelines for quality in pharmaceutical product concept of qbd also extends to analytical methods, it is mandatory process in QBD to define a goal.A protocol for the method which will continue monitoring the process throughout in a systematic way and working on alternate methods as well to get optimal performance, the methods given are carefully analysed in structured pattern for risks and is put for a challenge of the validity of method which later on can be taken for the criteria, benefit of these studies.The performances can be improved as well as clearly understood along with the risk management and desired performance methods which can also be validated later on, the review briefly gives an inside view of application of analytical QBD in industries and its current status with examples and principles of analytical methods in HPTLC ,titration for moisture content, determination of toxic impurities in mixtures,quantative colour measurement and various spectroscopic method for identification of chemical moiety.Qbd developed spectroscopic and chromatographic method are usually done as per ICH Q8 R2 , the critical parameters are compared to principle observation and analysis, the HPTLC method employs solvent usage and detection of absorbance and wavelength comparison.

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PHSIJ-36
Thiazolidin-4-One Derivatives On Human Lung Fibroblast Shows Oxygen Free Radical Scavenging Activity

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Abstract

The antioxidants are proving crucial tools in the exploration of oxidant stress-related diabetic pathologies and despite the noticeable prospective merit of the safety and efficacy of antioxidant supplementation in any future treatment remains to be conventional. The development of innovative methods for the synthesis of five-member heterocyclic compounds is an ever-expanding area in bioorganic and medicinal chemistry. Specifically, those containing the thiazolidinedione ring have been expansively used as key building blocks for synthesizing various drugs. In present study we endeavor to display a more chemically versatile and diverse thiazolidin-4-one derivatives as a suitable pharmacophore for antioxidant activity. Antioxidant activity was evaluated by using both enzymatic and non-enzymatic activities such as catalase (CAT), superoxide dismutase (SOD), glutathione peroxidase (GPX) on cell lines and free radical scavenging activity by DPPH (1, 1-diphenyl-2-picryl-hydrazil) assay method and ferric reducing antioxidant power (FRAP) assays. Finally, all tested compounds exhibited a talented antioxidant activity. In addition, all the synthesized derivatives showed non-toxic effects against a diseased human lung fibroblast (COPD), HCC7231 (TACC CCL-96). In prospect study, the movement of the compounds may be manipulated by optimizing a lead molecule by introducing un-saturation or heterocyclic ring at C5 of thiazolidinediones. The outcomes of such studies may be positive for the clinical applications in humans and may open up a new therapeutic avenue. Keywords: Thiazolidinediones, antioxidant, ascorbic acid, DPPH, free radical scavenging activity, Catalase (CAT), Superoxide dismutase (SOD), Glutathione peroxidase (GPX).

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PHSIJ-37
In-Vitro Assessment Of The Anti-Microbial And Anti Oxidant Of Moringa Oleifera And Azadirachta Indica Against Bacterial Endophytes: A Comparative Study

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Abstract

The current line of investigation was aimed at scrutinizing the phytochemicals and isolate the endophytic fungi from the leaf extracts of two higher medicinal plants (Moringa oleifera and Azadirachta indica) for anti-microbial and antioxidant potentials in different solvents (water and ethylacetate). Different in vitro methods such as 2-2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging, disc diffusion methods were employed in the study. The results revealed that Moringa oleifera has outstanding scavenging activity than A. indica, it was found that DPPH inhibition was significantly increased with increasing amount of extract when compared to the standard control ascorbic acid. Endophytic fungi Staphylococcus aureus and Pseudomonas were isolated from M. oleifera and A. indica. Similar approach both the leaf extract was subjected anti-microbial activity by disk diffusion technique. The Minimal inhibitory concentration (MIC) of the extracts were determined by disc diffusion method and the results revealed that A. indica showed promising activity against gram positive bacteria Staphylococcus aureus, Bacillus subtilis and fungi Candida; it was found to be in effective against gram negative bacteria such as Pseudomonas, E. coli and A. niger when compared to Moringa oleifera, standard control amoxicillin. Further work is proposed on active constituents of the plant for better lead development and its exploitation as novel bioactive antimicrobial and antioxidant compounds. Keywords: Moringa oleifera, Azadirachta indica, Endophytic fungi, Staphylococcus aureus, Pseudomonas, 2-2-diphenyl-1-picrylhydrazyl and Ascorbic acid.

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COLLEGE OF PHYSIOTHERAPY
SCHOOL OF HEALTH SCIENCES
Publication Summary

International Journal	01	(PHTIJ-01)

PHTIJ-01

Evidence Base of Yoga Studies on Cardiovascular Health: A Bibliometric Analysis

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Abstract

Noncommunicable diseases including coronary artery disease contribute to approximately 50% of global mortality. Pharmacological treatment alone may not be a panacea for such diseases since it may be associated with various other adverse effects. Hence, strategies such as Yoga involving healthy lifestyle and stress management are widely sought by the patient population.

Materials and Methods:

An electronic search of PubMed as a standard bibliographic database was performed through February 2015 using the keywords "Yoga" and "Cardiovascular." Studies with Yoga as the independent variable and parameters related to cardiac health as the dependent variable were included and exclusion criteria were applied.

Results:

A total of 149 publications were identified which met the inclusion criteria for analysis. Of the total publications, 44% were clinical trials of which 19% were randomized controlled trials which may be categorized as high-quality ones. An upward trend in the overall research in this area is evident. Major work has been accomplished by researchers of the United States (38%) and India (29%).

Conclusion:

The survey indicates that the number of publications in the field of "Yoga" and "Cardiovascular" health has increased rapidly in the late years. Analysis comprising the nation/state helps define its status with regard to its counterparts and helps understand science priorities and disease control strategies in an effort to provide cost-effectiveness and quality control. There is a need for further high-quality studies in the field of "Yoga" and "Cardiovascular" diseases to validate the effects of Yoga on health parameters.

Keywords: *Bibliometrics*, *cardiovascular*, *yoga*

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SCHOOL OF BASIC AND APPLIED SCIENCES

FUNDED PROJECTS

Sl. No	PROJECT START DATE & PERIOD	PRINCIPAL INVESTIGATOR(S)	FUNDING AGENCY	PROJECT TITLE	Amount Sanctioned (INR)	Amount Received (INR)
1	2015-2020	Dr. Pradipta Banerjee (PI)	VGST - Government of Karnataka	Isolation of therapeutic cryptic peptides involved in blood pressure regulation from marine industry waste	30,00,000	20,00,000
2	2016-2019	Dr. Sunil S. More (PI) Dr. Gautham S.A., DSU	DST-Extra Mural Research	Purification and preparation of nanococktail of active principles of folk medicinal plants as first-aid formulation for snake bite victims	28,53,400	24,00,000
3	2019-2022	Dr. Santosh Choudhari (PI) Dr. Nataraj Sanna Kotrappanavar Jain University	Science and Engineering Research Board (SERB)	Separation of Biobutanol via scalable approach of pervaporation: To be a "Viable Biofuel for Future"	40,96,400	2100000
4	2017-2020	Dr. Sunil S. More, DSU (PI) Dr. Gautham S.A., DSU Dr. Arpan Kumar Maiti, DSU	DST - Extra Mural Research Grant	Investigations on intestinal neuropeptides as anticolitogenic agents on mitochondrial function for the maintenance of colon epithelial tract in ulcerative colitis	40,00,000	34,00,000

Sl. No	PROJECT START DATE & PERIOD	PRINCIPAL INVESTIGATOR(S)	FUNDING AGENCY	PROJECT TITLE	Amount Sanctioned (INR)	Amount Received (INR)
5	2017-2020	Dr. Pradipta Banerjee (PI)	DST - Early Career Research	Isolation of matricryptic peptides from marine industry waste involved in nanocrystal hydroxyapatite formation and fabrication of a peptide based osseointegrative implant coating	35,00, 000	29,00,000
6	2017-2019	Dr. Shobha K. Jayanna (PI)	Vision Group on Science & Technology - KFIST Level (1)	Immobilized microbial consortium for pesticide bioremediation in ginger cultivated soils of Karnataka	20,00,000	10,00,000
				TOTAL FUNDING : INR 194.5 Lakhs (1.94 Crores)		

School of Engineering

Ongoing Funded Projects

Dept.	PRINCIPAL INVESTIGATOR (S)	FUNDING AGENCY	PROJECT TITLE	FUNDED AMOUNT (INR)	Project Start Date and Period
Chemistry	Dr. S. Ashoka	Science and Research Engineering Research Board (SERB), Govt. of India	Functionalized meso/microporous nanostructured metal oxides sensors for screening dispersed heavy metalions: One-shot disposable sensors strips	26.45 Lakhs	Aug2017 (3 years)
Physics	Dr.Baishali Garai	Indian Space Research Organization (ISRO) - RESPOND	Design and development of a miniaturized low cost Graphene based radiation detector for space applications	19.5 Lakhs	May 2018 (3 years)
	Dr. Radhika D.	Indian Space Research Organization (ISRO) - SSPO	Telltale of Galactic Black hole X-ray binaries from AstroSat archival observations	24 Lakhs	May 2019 (3 + 1) years
	Dr. Radhika D.	ISRO-RESPOND	Investigation of spectro-temporal variabilities of stellar mass Black Hole X-ray binaries using AstroSat	20.87 Lakhs	July 2019 (3 years)
ECE	Dr. Arungalai Vendan	Dept of Science & Technology	Design and Development of Smart MIAB Welding Machine for joining Ferrous and Non-Ferrous Tubes and Pipes.	48.8 Lakhs	October 2018 (3 years)
			TOTAL FUNDING : INR 139.62 Lakhs (1.39 Crores)		

CONSULTANCIES

Sl. No.	NAME OF THE FACULTY	CONSULTANCY AWARDED AGENCY	TYPE OF WORK
1	Sreenivasa Rao Amaraneni	**Eureka Forbes Ltd/ Aqua diagnostics Ltd Bangalore**	Evaluation test for Copper leaching of Cartridge (3No) in unit of Dr. Aquaguard NRICH RO+UV+MTDS water purifier with Active Copper Maxx cartridge
2	Dr. Radhika	U R Rao Satellite centre, ISRO	Science team member for ISRO's future astronomy mission

Summary of Publications and Sponsored Projects 2019-2020

Schools	School of Basic and Applied Sciences	School of Commerce and Management	School of Engineering	School of Health Sciences	Total
International Journal Publications	12	14	73	49	**148**
National Journal Publications		02	05		**07**
International Conferences		09	42		**51**
National Conferences	01	01	01		**03**
Book Chapters	04		12	01	**17**
Patent(s)			01		**01**
Total	**17**	**26**	**134**	**50**	**227**
Sponsored Projects	6 DST : 4 VGST : 2		5 DST: 2 ISRO:3		**11**
Consultancies			2		**2**