



DAYANANDA SAGAR UNIVERSITY

SCHOOL OF ENGINEERING

ARTIFICIAL INTELLIGENCE AND ROBOTICS

Minutes of Meeting – I BOS

Subject: Board of Studies- ARTIFICIAL INTELLIGENCE AND ROBOTICS

Venue: Lecture Hall – 5, Block A, DSU, Main Campus - Harohalli

Date: Saturday, 14/06/2024

Agenda

Sl. No	Details
1	Vision, Mission of the AI and Robotics Department
2	Finalization of scheme and syllabus for 2023-24 curriculum B.Tech, AI and Robotics, from III semester onwards
3	Any matter of academic interest



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List of BoS members and faculties present:

Sl. No.	NAME	DESIGNATION
1	Dr. Pramod Kumar Naik	Chairperson, Department of AI and Robotics
2	Mr. Rohan Dalmia	Product Development Lead, Bosch Global Software Tech. Bangalore
3	Mr. Nijil George	Robotics and Automation Systems, Tata Consultancy Services
4	Dr. A Roy Chowdhury	Professor, Founder and Head of Robotics Innovation Lab, IISc
5	Dr. V Pandu Ranga	Professor, IIT Bhubaneswar
6	Dr. Rupam Bhaduri	Professor, AI and Robotics, DSU
7.	Dr. Viswanathan R	Associate Professor, DSU
8.	Dr. Gangadhar	Associate Professor, DSU
9.	Dr. Jayavrinda Vrindavanam	Chairperson – Artificial Intelligence and Machine learning, DSU



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Points Discussed and Observations:

The Dean of the School of Engineering and the Chairman welcomed all the BOS members. The Dean discussed the importance of the AI and Robotics program and emphasized the significance of this meeting in shaping the future of the curriculum.

The observations during the discussion are presented below.

Agenda 1: Vision, Mission of the AI and Robotics Department

The Chairman presented the Vision and Mission of the AI and Robotics program. The members reviewed it and felt it to be satisfactory.

The Vision and Mission of the Department are attached as Annexure-I.

Agenda 2: Finalization of scheme and syllabus for 2023-24 curriculum B.Tech, AI and Robotics, from III semester onwards

Thorough Discussion of Scheme and Syllabus:

There was a thorough discussion of the scheme for all semesters. The syllabus for the 3rd and 4th semesters was reviewed in detail, along with an overview of the remaining semesters. The scheme review was also done w.r.t feedback analysis(2023-24) from students, parents, faculties & employer.

1. Discussions regarding the 3rd and 4th sem courses:

- Probability and Statistics: BOS members suggested that the Probability and Statistics course should be taught before or concurrently with the Machine Learning course to provide students with the necessary foundational knowledge.
- Data Structures Using C: Enhance problem-solving skills through the application of data structures in C, following an introductory C programming course.



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- Principles of Artificial Intelligence: Introduce fundamental AI concepts in the 3rd semester to build a strong foundation for advanced AI studies.
- Fundamentals of Robot Mechanics: Focus on mechanical design and load distribution within robotics to ensure structural integrity.
- Skill Enhancement Course – I: Develop practical skills in PLC programming and the use of hydraulics and pneumatics in robotic systems.
- Transforms and Numerical Techniques: Equip students with mathematical tools and numerical methods critical for solving control systems problems.
- Mechatronics and Smart Manufacturing: Integrate principles of mechatronics with smart manufacturing techniques to enhance automation and digital manufacturing processes.
- Kinematics and Dynamics for Robotics: Provide a deep understanding of motion and force analysis crucial for designing and optimizing robotic systems.
- Computer Organization and Architecture: Explore the fundamental hardware structures and operational principles that form the backbone of computer systems.
- Advanced Deep Learning: Delve into sophisticated deep learning frameworks and applications, preparing students for cutting-edge AI challenges.
- Minor Project – I: Foster hands-on experience through project-based learning, emphasizing practical implementation of theoretical concepts.
- Skill Enhancement Course – II: Develop technical skills in rapid prototyping with 3D printing and integrating Internet of Things (IoT) technologies into various applications.



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2. Course Advancements:

- The "Introduction to Artificial Intelligence" course has been advanced to the 3rd semester to provide students with an early exposure to AI concepts, allowing them to build on this knowledge in subsequent courses.
- There is a need to advance the courses in advanced machine learning, including topics on generative AI, to ensure students are well-versed in the latest developments in the field.

3. Course Replacements:

- The course on "Materials, Sensors, Actuators, and Manufacturing" has been replaced by "Mechatronics and Smart Manufacturing" to reflect the integration of modern manufacturing techniques and mechatronics.
- A separate course on Reinforcement Learning will be offered to focus specifically on this advanced area of machine learning, which is crucial for developing intelligent systems.
- "Control Systems" will be revised to "Control Systems for Robotics" to tailor the content towards robotic applications, assuming students have already completed a course in robot kinematics and dynamics.
- A new course titled "Thermal Fluids and Electronics Cooling" will be introduced to cover topics on fluids, thermal management, and cooling of electronic devices, addressing the increasing importance of thermal management in modern electronics.

Reasons for Changes



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- **Foundational Knowledge:** The introduction and advancement of certain courses are aimed at providing students with the necessary foundational knowledge early in the program.
- **Alignment with Industry Trends:** The changes reflect the need to align the curriculum with current industry trends and technological advancements, ensuring students are well-prepared for their careers.
- **Specialization:** Offering specialized courses like "Reinforcement Learning" and "Control Systems for Robotics" allows students to gain in-depth knowledge in key areas of AI and robotics.
- **Modernization:** Replacing outdated courses with ones focusing on smart manufacturing and thermal management ensures the curriculum remains relevant and up to date.

Agenda 3 : Any matter of academic interest: Academic Discussions

Teaching Methods:

- The faculty discussed various teaching methods to be employed, including lectures, interactive sessions, and flipped classrooms to enhance student engagement and understanding.

Assignments and Assessments:

- Assignments will be designed to include both theoretical and practical components, ensuring students can apply concepts learned in class.
- Assessments will be a mix of quizzes, mid-term exams, final exams, and continuous assessment through projects and presentations.

Projects:



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- Projects will be a significant component of the curriculum, with an emphasis on real-world applications. Students will be encouraged to undertake projects that solve industry-related problems, fostering practical skills and innovation.
- Capstone projects in the final year will require students to integrate knowledge from various courses, demonstrating their proficiency in AI and robotics.

Hands-on Training:

- Hands-on training will be provided through laboratory sessions, workshops, and collaboration with industry partners. This will include working with robotics kits, AI development platforms, and simulation tools.
- Internships and industry visits will be arranged to give students exposure to real-world environments and applications of their learning.

Conclusion

The meeting successfully addressed the key points and suggestions for enhancing the AI and Robotics BTech program. The discussed changes aim to better align the curriculum with the current trends and demands in the field of artificial intelligence and robotics.

The suggestions given by the members have been implemented in the updated scheme and syllabus attached as Annexure-I

Dr. Rupam Bhaduri
Dr. Rupam Bhaduri
(Professor.)

Dr. Pramod Kumar Naik
Dr. Pramod Kumar Naik
Chairman The Chair
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File attached as Annexure-I

Dr. Gangadhar TG
(Dr. Gangadhar TG)