



**SCHOOL OF
ENGINEERING**



Dayananda Sagar University

Devarakagalahalli, Harohalli Kanakapura Road, Ramanagara, Karnataka 562112

Department Of Computer Science & Engineering
(Artificial Intelligence & Machine Learning)

REPORT ON

“FACULTY TRAINING: LARGE LANGUAGE MODELS (LLMs)”

Organized by

Department Of Computer Science & Engineering
(Artificial Intelligence & Machine Learning)

In association with

CENTER FOR RESEARCH AND INNOVATION IN AI-(CRIA)
and

SCHOOL OF COMPUTER APPLICATIONS

Dayananda Sagar University

12TH MARCH, 2025

Guest of honour:

Dr. J. B. Simha, CTO, Abiba systems.

Conveners:

Dr. D. Hemachandra Sagar Chancellor, DSU

Dr. D. Premachandra Sagar Pro-Chancellor, DSU

Dr. Amith Bhatt, Vice Chancellor, DSU

Dr. Puttamadappa C, Registrar, DSU

Dr. Udaya Kumar Reddy K R , Dean, SoE, DSU

Dr. Ramesh R Galikere, Dean (Academics), Science & Technology, DSU

Dr. Kousalya Govardhanan Dean (R&D)

**Dr. Jayavrinda Vrindavanam V, Chairperson, and Professor, Department of
CSE (AI & ML), DSU**

Faculty Coordinators:

Dr. Bahubali Shiragapur Professor, CSE(AI & ML)

Dr. Hanumanth Sastry Sistla Professor, CSE(AI & ML)

Prof. Pradeep Kumar K Assistant Professor, CSE(AI&ML)

**DAYANANDA SAGAR UNIVERSITY**

Deverakaggalahalli, Harohalli, Kanakapura Rd, Dist. Ramanagara, Karnataka-562112

SCHOOL OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
(ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

CENTER FOR RESEARCH AND INNOVATION IN AI- (CRIA)

In Association with
SCHOOL OF COMPUTER APPLICATIONS

Faculty training: Large Language Models (LLMs)

**SOFTWARE
ENGINEERING USING
LLMS – DEVELOPING A
FORECASTING SOLUTION**

RESOURCE PERSON
Dr. J.B. Simha
CTO, Abiba Systems, Bengaluru,



 12th March, 2025

 11.00 AM to 1.00 PM

 SOE, A 508

CONVENERS:
Dr. D. Hemachandra Sagar
Chancellor, DSU
Dr. D. Premachandra Sagar
Pro-Chancellor, DSU
Dr. Amit Bhatt
Vice Chancellor, DSU
Dr. Puttamadappa C
Registrar, DSU
Dr. Udaya Kumar Reddy
Dean, SOE, DSU
Dr. Ramesh R Galigekere
Dean (Acad) Science & Technology
Dr. Kousalya Govardhanan
Dean (R&D)
Dr. Jayavrinda Vrindavanam V
Professor & Chairperson CSE (AI & ML), DSU

STAFF COORDINATORS
Dr. Bahubali Shiragapur
Professor, CSE(AI & ML)
Dr. Hanumanth Sastry Sistla
Professor, CSE(AI & ML)
Prof. Pradeep Kumar K
Assistant Professor, CSE(AI&ML)

Figure 1: Poster

Event Report

The event "Software Engineering Using LLMs – Developing a Forecasting Solution", conducted by Dr. Bharatheesh Jaysimha (JBS), provided valuable insights into the role of Large Language Models (LLMs) in software engineering, particularly in developing forecasting solutions. Organized by the Department of Computer Science & Engineering (Artificial Intelligence & Machine Learning) in association with the Center for Research and Innovation in AI (CRIA) and the School of Computer Applications, the session explored how LLMs can enhance predictive analytics, automate complex tasks, and improve the efficiency of software development workflows. Dr. Jaysimha discussed key methodologies for integrating LLMs with traditional forecasting techniques, highlighting real-world applications, industry case studies, and best practices. The event served as an excellent platform for researchers, students, and professionals to understand the potential of AI-driven forecasting models while addressing challenges such as model accuracy, ethical considerations, and performance optimization. This report summarizes the key discussions, technical insights, and practical applications presented during the session.



Figure 2: Guest of honour and conveners at the event

Prof. Pradeep Kumar provided a brief overview of the agenda, outlining the key topics and objectives of the session. He highlighted the importance of understanding large language models and their applications in modern software engineering. His introduction ensured that participants had a clear roadmap of the workshop, setting the tone for an engaging and informative learning experience. After presenting the agenda, he officially kick-started the session, paving the way for in-depth discussions and hands-on insights from the resource person.



Figure 3: Prof Pradeep Kumar addressing the gathering.

Dr. Jayavrinda Vrindavanam, the esteemed Head of the Department, inaugurated the event with a warm welcome speech, setting the stage for an insightful session on "Software Engineering Using LLMs – Developing a Forecasting Solution." In her address, she emphasized the growing significance of artificial intelligence and machine learning in modern software engineering and the role of large language models in transforming predictive analytics. She highlighted the collaborative efforts of the Department of Computer Science & Engineering (Artificial Intelligence & Machine Learning), the Center for Research and Innovation in AI (CRIA), and the School of Computer Applications in organizing this event to foster research and innovation in AI-driven solutions. Her words set an inspiring tone, encouraging participants to actively engage and explore the potential of LLMs in developing efficient forecasting systems.



Figure 4: Dr Jayavrindevrindavanm V welcoming the gathering.

Dr. Udaya Kumar Reddy, the Dean of the School of Engineering, addressed the gathering and emphasized the growing importance of large language models in shaping the future of technology. He highlighted how LLMs are revolutionizing various domains, including software engineering and predictive analytics, making them an essential tool for future advancements. He stressed the necessity of workshops like "Software Engineering Using LLMs – Developing a Forecasting Solution" in equipping students, researchers, and professionals with the knowledge and skills required to harness the potential of AI-driven solutions. His speech underscored the significance of continuous learning and innovation in the rapidly evolving field of artificial intelligence.



Figure 5: Dr Uday Kumar Reddy addressing the gathering.

Dr. Sentil, the Dean of Computer Applications, praised the resource person for delivering an insightful and informative session on the role of large language models in software engineering and predictive analytics. He acknowledged the depth of knowledge shared during the workshop and its relevance in the ever-evolving field of artificial intelligence and machine learning. He also encouraged participants to actively engage in similar workshops in the future, emphasizing the importance of staying updated with advancements in AI-driven technologies. His words served as a motivation for students and professionals to continue exploring innovative applications of large language models in various domains.



Figure 6: Dr. Sentil motivating faculties.

Dr. J. B. Simha, the Chief Technology Officer of Abiba Systems, provided a brief introduction to the topics he would be covering during the session. He outlined the significance of large language models in software engineering and their applications in predictive analytics. He emphasized how these models can enhance forecasting accuracy, automate complex tasks, and improve decision-making processes. He also discussed the evolution of artificial intelligence and machine learning, highlighting how advancements in LLMs have revolutionized industries such as finance, healthcare, and business intelligence. Dr. Simha elaborated on the challenges and ethical considerations of using AI-driven models, stressing the importance of responsible AI practices. Additionally, he provided insights into real-world case studies where LLMs have significantly improved forecasting solutions, making systems more efficient and adaptive to changing environments. His introduction set the stage for an engaging and insightful workshop, giving participants a clear understanding of what to expect.



Figure 7: Dr Simha addressing the gathering.

After the break, the event resumed with renewed enthusiasm as participants reassembled for the next segment of the session. The resource person continued the discussion, diving deeper into the practical applications of large language models in software engineering and predictive analytics. The session became more interactive, with hands-on demonstrations, real-world case studies, and engaging discussions on optimizing LLMs for forecasting solutions. Participants actively engaged by asking questions and sharing their perspectives, making the session both insightful and dynamic.



Figure 8: Participants at the event.

TOPICS COVERED:

Introduction to LLMs

The session began with an introduction to Large Language Models (LLMs), explaining their architecture, working principles, and significance in modern software engineering. The discussion covered how LLMs process and generate human-like text, their role in natural language understanding, and their applications in various domains such as forecasting, automation, and decision-making. The resource person also highlighted recent advancements and challenges in implementing LLMs effectively.

Representation of Data

This segment focused on different ways to represent data, which is crucial for training and utilizing machine learning models effectively. The key methods covered were:

- ◆ Graph-based representation: Using nodes and edges to model relationships between data points, commonly applied in network analysis, social media, and recommendation systems.
- ◆ Rule-based representation: Encoding knowledge in the form of logical rules, often used in expert systems and knowledge-based AI applications.
- ◆ Case-based representation: Storing past cases or instances to solve new problems by analogy, widely used in case-based reasoning systems.
- ◆ Equation-based representation: Expressing data relationships mathematically, useful in simulations, physics-based models, and optimization problems.

Learning Data

The workshop also covered different approaches to learning from data, helping participants understand how machine learning models are trained:

- ◆ Iterative learning: A process where models continuously update and improve their parameters based on repeated exposure to data, often seen in deep learning and reinforcement learning.
- ◆ Supervised learning: A method where the model is trained on labeled data, meaning it learns from input-output pairs to make accurate predictions. Common applications include classification and regression tasks.

- ◆ **Unsupervised learning:** A learning approach where the model finds patterns and relationships in unlabeled data, commonly used in clustering, anomaly detection, and dimensionality reduction.

Reasoning in AI

The session also explored reasoning techniques that enable AI systems to make decisions and predictions:

- ◆ **Probabilistic reasoning:** A method that deals with uncertainty in data by assigning probabilities to different outcomes. This is widely used in Bayesian networks, weather forecasting, and risk assessment models.
- ◆ **Approximate reasoning:** A technique that allows AI to make informed decisions even with incomplete or uncertain data, often implemented in fuzzy logic systems and heuristic-based algorithms.

ARIMA (AutoRegressive Integrated Moving Average)

ARIMA is a widely used statistical model for time series forecasting. It combines three components: AutoRegression (AR), which uses past values to predict future ones; Integration (I), which makes the time series stationary by differencing; and Moving Average (MA), which models the relationship between past forecast errors and future values. ARIMA is effective for analyzing time-dependent data and is commonly applied in finance, weather prediction, sales trends, and economic forecasting. Its ability to capture linear relationships in time series data makes it a powerful tool for short-term forecasting.

Fuzzy Time Series

Fuzzy Time Series (FTS) is a forecasting method that applies fuzzy logic to handle uncertainty and imprecise data in time series analysis. Unlike traditional models that rely on precise numerical values, FTS represents data as fuzzy sets, making it particularly useful for situations where historical data is vague or incomplete. This approach is commonly used in stock market analysis, weather forecasting, and enrollment predictions. By allowing for flexible and adaptive forecasting, FTS is beneficial in scenarios where traditional time series models struggle with uncertainty and variability.

Large Language Models (LLMs) are transforming software engineering by enhancing automation, improving code generation, and optimizing decision-making processes. These models, trained on vast datasets, can assist in writing, debugging, and refactoring code, significantly reducing development time and human effort. LLMs also facilitate natural language processing, enabling seamless interaction between developers and AI-powered tools. In predictive analytics and forecasting, they enhance accuracy by identifying patterns in large datasets, making them invaluable in areas like demand prediction, anomaly detection, and risk assessment. Additionally, LLMs support intelligent documentation, automated testing, and knowledge retrieval, streamlining software development workflows. As AI continues to evolve, integrating LLMs into software engineering processes will lead to more efficient, adaptive, and intelligent systems.



Figure 9: Dr Simha teaching LLM

As part of the hands-on session, Dr. Simha introduced participants to Shiny, a web application framework for R that allows users to build interactive and dynamic data visualizations. He explained the fundamental concepts of Shiny, including user interface design, server-side logic, and reactive programming, which enable real-time updates based on user inputs. Participants were guided through the process of creating a basic Shiny application, integrating data visualization tools, and implementing interactive elements such as sliders, dropdowns, and charts. Dr. Simha also demonstrated how Shiny can be used for

building forecasting dashboards, making it a powerful tool for presenting predictive analytics in an intuitive and user-friendly manner.

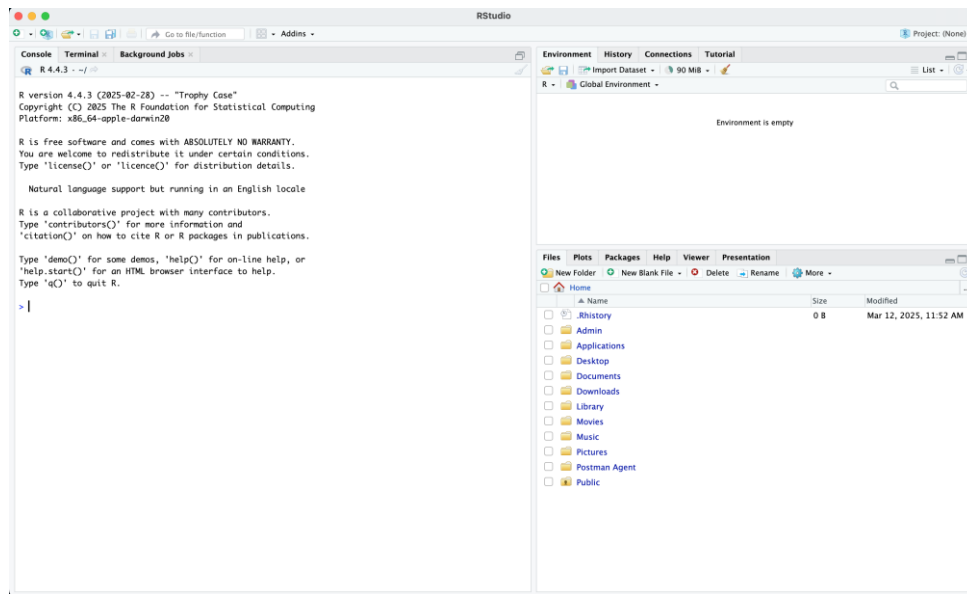


Figure 10: Shiny implementation by participants.

The event concluded with a vote of thanks delivered by Dr. Vinutha, who expressed gratitude to the resource person, Dr. J. B. Simha, for sharing his valuable insights and expertise. She also extended her appreciation to the organizing committee, faculty members, and participants for their active engagement and contributions to the success of the workshop.

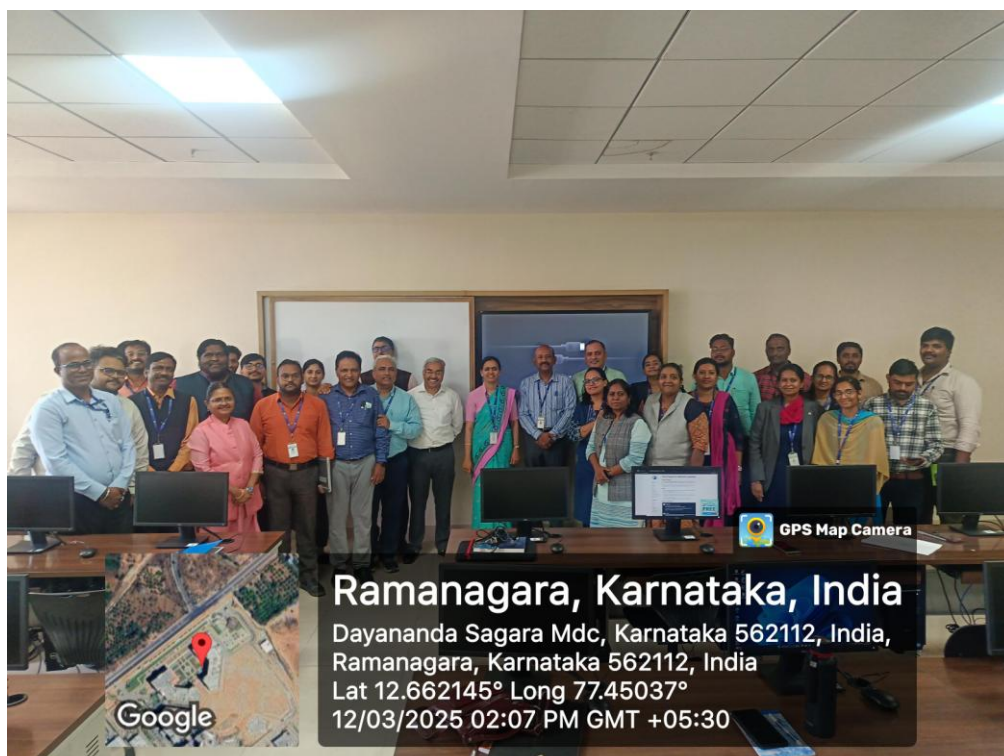


Figure 12: Resource person with participants.

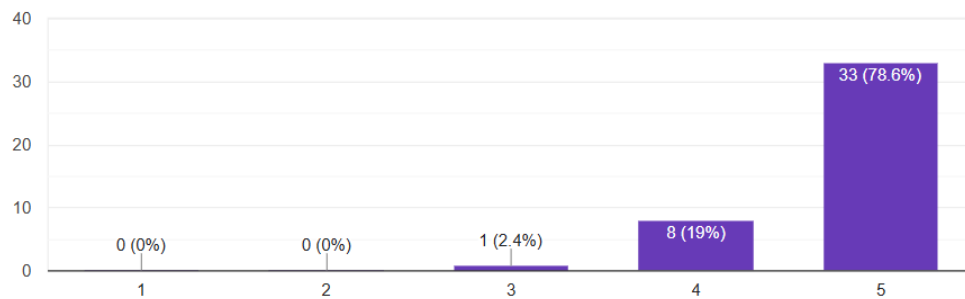
Participant Feedback:

Untitled Section

How would you rate the overall session?

 Copy chart

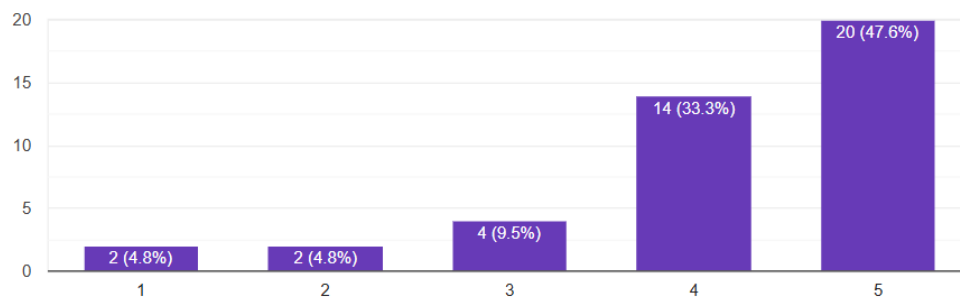
42 responses



How would you rate the hands-on session?

 Copy chart

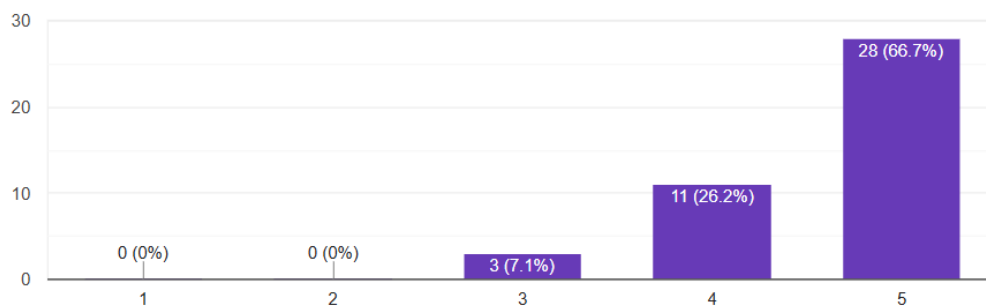
42 responses



How informative was the talk on Software Engineering using LLMs?

 Copy chart

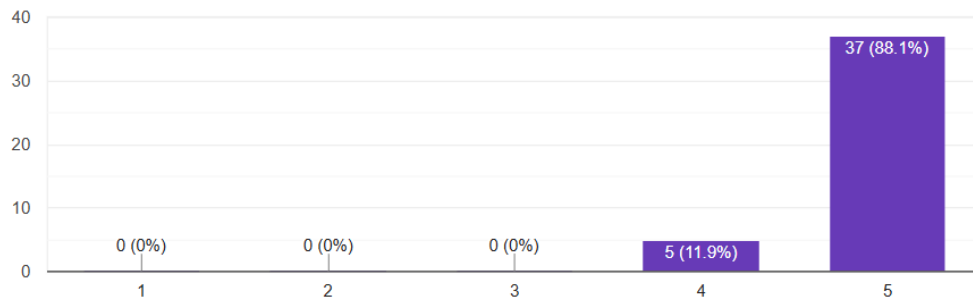
42 responses



How engaging and interactive was the speaker?

 Copy chart

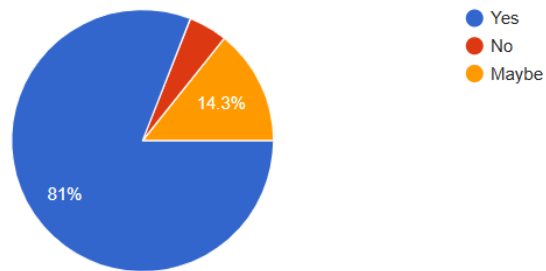
42 responses



Did the talk meet your expectations?

 Copy chart

42 responses

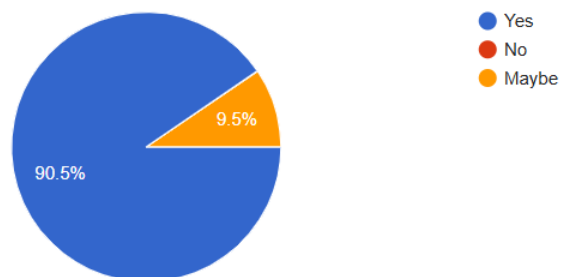


Untitled Section

Would you like to see more sessions on similar topics?

 Copy chart

42 responses



Any additional feedback or suggestions for improvement?

42 responses

-

NA

Very good session

No

Overall good. Only one issue. Next time Stick to the time as today it went extra one hour than the scheduled time.

1) Session Could have started on time which could have helped speaker to cover more
2) Content could have been better in terms of coverage on the topic selected rather than focusing more on AI

More Hands-on Session if possible

It was a wonderful talk with hands on session

Any additional feedback or suggestions for improvement?

42 responses

It was good

Overall good

Need have more time for participants to have hands on session.

Excellent

Provide sufficient time for hands on

Can be more hands on experience. Session went well but more time was needed.

Hands on Session

Very informative and much interesting session

I feel it would have been better to have something on how LLMs work, about agentic workflows or vector

Any additional feedback or suggestions for improvement?

42 responses

Hands on session

Very informative and much interesting session

I feel it would have been better to have something on how LLMs work, about agentic workflows or vector databases instead of prompt engineering. Prompt engineering is something which I believe is self-teachable(if needed) and not worth the time spent.

Please schedule at convenient times.

Good.. Can extend the hands on for a day

More complete hands on session would help

Hand on session is required

Need more hands-on sessions for better understanding and improvements.

The session was great overall. Would love to attend more of such sessions.

Any additional feedback or suggestions for improvement?

42 responses

good session

it was interactive session and informative session

Please collect the PPT, Prompts and Research paper used for the workshop and share it to the participants. Thanks for the wonderful sessions.

Very Good Session

It would be had two different sessions for theory and hands-on
Otherwise very useful session

Contact hours should be more.

Should elaborate more on advanced models

Please increase the time slot, so that hands-on session can be more effective.

Any additional feedback or suggestions for improvement?

42 responses

Should elaborate more on advanced models

Please increase the time slot, so that hands-on session can be more effective.

No suggestions.

It's okay.. not focused on current technological advancement in LLM and others.

Talks or hands on session related to building LLM models

NIL

Very informative

Kindly share the materials.

.

Signature Faculty Coordinators:

Dr. Bahubali Shiragapur Professor, CSE(AI & ML)

Dr. Hanumanth Sastry Sistla Professor, CSE(AI & ML)

Dr. JayavrindaVrindavanam V,
Professor &Chairperson,
Department of CSE (AI & ML), DSU