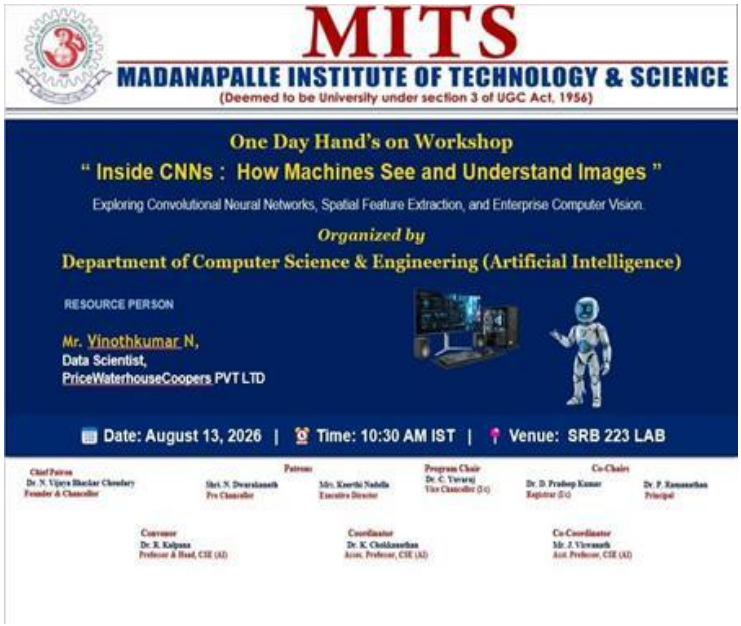
A Report on Hand's-on workshop on "Inside CNNs: How Machines See and Understand Images - Exploring Convolutional Neural Networks, Spatial Feature Extraction, and Enterprise Computer Vision"

Organized by Department of CSE (Artificial Intelligence) on 13.08.2026



Report Submitted by: Dr. K. Chokkanathan, Associate Professor, and Mr. J. Viswanath, Assistant Professor, Department of Computer Science & Engineering (Artificial Intelligence).
Venue: SRB-223 Lab
Time: 9:30 AM to 12:00 PM
Mode of Conduct: Offline
Attendees Count: 65
Resource Person Details: Mr. Vinothkumar. N, Data Scientist, Price Water House Coopers Pvt. Ltd.,

Mr. Vinothkumar N, Data Scientist, Price Water house Coopers PVT LTD. His work focuses on Large Language Models (LLMs), Retrieval-Augmented Generation (RAG), structured prompting, and reducing hallucinations in AI applications. He has developed impactful projects like evidence-based AI assistants and is deeply involved in designing safe, real-world AI solutions.

Objective of the Program:

- Explain spatial feature extraction — how CNNs detect edges, textures, shapes, and hierarchical patterns in images.
- Demonstrate image understanding — showing how machines move from raw pixels to semantic meaning.
- Bridge theory and enterprise applications — connecting CNN fundamentals to practical use cases in industries such as healthcare, manufacturing, retail, and security.
- Highlight advancements in computer vision — discussing innovations like transfer learning, attention mechanisms, and multimodal vision systems.

Event details:

The one-day workshop commenced with a formal inauguration. The dignitaries invited to the dais were Dr. R. Kalpana, Professor & Head, Department of Computer Science & Engineering – Artificial Intelligence; Dr. K. Chokkanathan, Associate Professor, Mr. J. Viswanath, Assistant Professor, Department of Computer Science & Engineering – Artificial Intelligence; and the Resource Persons, Mr. Vinothkumar N, Data Scientist, Price Water house Coopers PVT LTD. The program began with a Welcome Address delivered by Dr. K. Chokkanathan After this, Dr. R. Kalpana addressed the gathering and highlighted the significance of emerging technologies such as Artificial Intelligence and modern web development. The resource persons were then formally introduced. The session was handed over to Mr. Vinothkumar N, Data Scientist, on "Inside CNNs: How Machines See and Understand Images" - Exploring Convolutional Neural Networks, Spatial Feature Extraction, and Enterprise Computer Vision.

The workshop *"Inside CNNs: How Machines See and Understand Images"* offered participants a comprehensive introduction to **Convolutional Neural Networks** and their role in modern computer vision. Resource persons explained the evolution of image analysis, moving from traditional feature engineering to deep learning approaches. Key concepts such as **spatial feature extraction** were demonstrated, showing how CNNs detect edges, textures, and hierarchical patterns to build meaningful representations of visual data. Participants engaged in hands-on sessions, developing simple applications like **image classifiers** and **enterprise vision tools**. The workshop also highlighted practical use cases across healthcare, manufacturing, and security, emphasizing the enterprise relevance of CNNs. Interactive discussions encouraged students to connect theory with practice, while activities reinforced understanding of how machines interpret raw pixels into semantic meaning. The event concluded with a vote of thanks, appreciating the resource persons and participants for making the session an enriching and successful learning experience.

Outcomes of the Event:

- Developed understanding of CNNs — participants gained clarity on how convolutional layers process visual data and enable machines to interpret images.
- Learned spatial feature extraction — acquired knowledge of how CNNs detect edges, textures, and hierarchical patterns to build meaningful representations.
- Built practical vision applications — hands-on sessions enabled the design of simple image classifiers and enterprise-oriented vision tools.
- Connected theory with enterprise use — exposure to real-world applications in healthcare, manufacturing, retail, and security enhanced industry relevance.
- Strengthened problem-solving skills — interactive exercises improved analytical thinking and the ability to apply CNN concepts to practical challenges.
- Enhanced understanding of computer vision innovations.

SDG Goals Aligned with the Event:

- **SDG 4 – Quality Education:** Delivered practical, hands-on learning in Generative AI using LangChain and Model Context Protocol (MCP).
- **SDG 8 – Decent Work and Economic Growth:** Built industry-relevant skills in AI application development, preparing for emerging roles in AI and technology.
- **SDG 9 – Industry, Innovation, and Infrastructure:** Encouraged innovation through the development of intelligent AI applications using LangChain and modern tools.
- **SDG 17 – Partnerships for the Goals:** Promoted collaboration between academia and industry through expert-led sessions on real-world AI technologies.

Conclusion:

- The workshop concluded successfully, providing a valuable platform for gaining practical knowledge in Artificial Intelligence and web development. The sessions on LangChain and Model Context Protocol (MCP) helped in understanding the development of modern AI applications, while the web development segment strengthened foundational skills. The hands-on activities and interactive discussions enhanced overall learning and engagement. The event proved to be an enriching experience, bridging the gap between theoretical concepts and real-world implementation.