Next Generation AI Architectures for Multimedia Data Analytics

03-08 November 2025 (Online)

Faculty Development Program

Organized by
Department of Artificial Intelligence and Data Science
Department of Computer Science and Engineering

06.00 PM - 8.00 PM

Online (Microsoft Teams)

NO REGISTRATION FEE

REGISTRATION LINK

Chief Patrons

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Conveners

- Dr. P. Bhagath, Professor & Head, AI&DS
- Dr. S. Nagarjuna Reddy, Professor& Head, CSE

Cordinators

- Mr. K. Sudhakar, Sr. Asst. Professor, AI&DS
- Mr. S. Srinivasa Reddy, Sr. Asst. Professor, CSE
- Mr. S. S. Rama Krishna, Sr. Asst. Professor, AI&DS
- Mr. D. Anil Kumar, Sr. Asst. Professor, CSE

SPEAKERS

Prof. Pradip K. Das
Department of CSE
IIT Guwahait, India
03 November

Dr. Pethuru Raj
Principal AI Architect
Inficion, India
04 November

Dr. Ritesh Ratti
AI & Data Science Manager
Temus, Singapore
05 November

Mr. Nahar Singh
Head of Machine Learning Division
Continental, India
06 November

Dr. Tushar Semwal
Lead Scientist
UNEY, Dubai
07 November

Dr. Snehasis Benerjee
Research Scientist
TCS Research, India
08 November

INSTITUTION'S INNOVATION COUNCIL
(Ministry of HRD Initiative)

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Accredited by NAAC with 'A' Grade & NBA (Under Tier - I),
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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

FDP Report on Next-Generation AI Architectures for Multimedia Analytics

Event Type	: One week FDP
Dates	: 03 – 08, November 2025
Time	: 06:00 PM - 08:00 PM
Mode	: Online
Organized by	: Organized by **Dept of AI & DS and CSE**, LBRCE.
Resource Speakers	: Prof. Pradip K. Das, Department of CSE, IIT Guwahati, India Dr. Pethuru Raj, Principal AI Architect, Infician, India Dr. Ritesh Ratti, AI & Data Science Manager, Temus, Singapore Mr. Nahar Singh, Head of Machine Learning Division, Continental, India Dr. Tushar Semwal, Lead Scientist, UNEY, Dubai Dr. Snehasis Benerjee, Research Scientist, TCS Research, India
Conveners	: **Dr. P. Bhagath**, Professor & Head, AI&DS **Dr. S. Nagarjuna Reddy**, Professor & Head, CSE
Coordinator(s)	: **Mr. K. Sudhakar**, Sr. Asst. Professor, AI&DS **Mr. S. Srinivasa Reddy**, Sr. Asst. Professor, CSE **Mr. S. S. Rama Krishna**, Sr. Asst. Professor, AI&DS **Mr. D. Anil Kumar**, Sr. Asst. Professor, CSE
Target Audience	: All the teaching faculty
Total no. of faculty	: **250**

Introduction

The Faculty Development Program (FDP) on **"Next-Generation AI Architectures for Multimedia Analytics"** was organized to upgrade the technical competency of faculty members in modern artificial intelligence technologies. The six-day program brought together expert speakers from **top academic institutions, global industry, and research organizations**, focusing on emerging trends in AI, multimodal analytics, generative models, embedded AI systems, and agentic intelligence. This FDP

provided a strong theoretical foundation combined with practical insights into real-world multimedia applications.

Objective of the Event

The major objectives of the program were:

- To provide deep insights into modern AI architectures used for multimedia analytics.
- To expose participants to multimodal learning, generative AI, and agent-based intelligent systems.
- To bridge the academic–industry gap through real-world case studies and expert talks.
- To strengthen faculty capability in deploying AI models in cloud-native and real-time environments.
- To encourage faculty to integrate emerging AI concepts into teaching, research, and project development.

Key Highlights of the FDP

- Expert lectures by IIT faculty, industry specialists, and international researchers.
- In-depth coverage of **transformer models, GNNs, multimodal analytics, and generative frameworks**.
- Demonstrations on **diffusion models, GANs, and agent-based intelligent systems**.
- Case studies from **automotive AI, cloud infrastructures, and multimedia applications**.
- Active participant interaction, Q&A discussions, and practical insights into real-time AI workflows.

Day-Wise Description of the FDP

Day 1 – 03 November 2025

Resource Person: *Prof. Pradip K. Das*, Dept. of CSE, IIT Guwahati, India

Session Highlights:

- Introduced fundamental concepts of **Next-Generation AI Architectures**.
- Discussed evolution of multimedia analytics and modern computational models.
- Explained transformer-based architectures and their applications in high-dimensional multimedia data.
- Demonstrated real-world use cases in classification, retrieval, and pattern recognition.

Outcome:

Participants gained a strong foundation on the transition from traditional ML to deep learning-driven multimedia systems.

Day 2 – 04 November 2025

Resource Person: *Dr. Pethuru Raj*, Principal AI Architect, Inficion, India

Session Highlights:

- Focused on **enterprise-grade AI architectures**.
- Explained deployment strategies for large-scale multimedia analytics applications.
- Covered cloud-native AI pipelines, MLOps, and model lifecycle management.
- Shared industrial case studies related to intelligent multimedia systems.

Outcome:

Participants understood practical deployment models and industry adoption trends.

Day 3 – 05 November 2025

Resource Person: *Dr. Ritesh Ratti*, AI & DS Manager, Temus, Singapore

Session Highlights:

- Covered **Graph Neural Networks** (GNNs), multimodal learning, and deep feature fusion.
- Demonstrated how multimodal datasets (audio-video-text) can be handled efficiently.
- Discussed advanced AI pipelines for smart city systems, surveillance, and healthcare imaging.

Outcome:

Participants acquired knowledge on next-level multimodal AI frameworks and real-time analytics pipelines.

Day 4 – 06 November 2025

Resource Person: *Mr. Nahar Singh*, Head, ML Division, Continental, India

Session Highlights:

- Focused on **AI for automotive and embedded multimedia systems**.
- Explained on-device learning, sensor-level data fusion, and ML accelerators.
- Showcased AI applications in ADAS, autonomous systems, and safety-critical multimedia analytics.

Outcome:

Participants gained insights into real-time embedded AI architectures used in industry-grade automotive systems.

Day 5 – 07 November 2025

Resource Person: *Dr. Tushar Semwal*, Lead Scientist, UNEY, Dubai

Session Highlights:

- Addressed **Generative AI models** for multimedia data.
- Covered diffusion models, GANs, and next-generation generative frameworks.
- Demonstrated AI-generated image synthesis, restoration, and content creation.

Outcome:

Participants understood the role of generative AI in multimedia enhancement and creative analytics.

Day 6 – 08 November 2025

Resource Person: *Dr. Snehasis Benerjee*, Research Scientist, TCS Research, India

Session Highlights:

- Discussed **Agentic AI Systems** and intelligent autonomous analytics.
- Explained knowledge-guided reasoning, retrieval-augmented multimedia systems, and model interpretability.
- Conducted hands-on demos on building intelligent agents for multimedia applications.

Outcome:

Participants learned state-of-the-art agent-based AI models and their integration into multimedia analytics systems.

Overall Outcome of the FDP

The FDP successfully achieved the following Overall outcomes:

- Improved faculty understanding of cutting-edge AI architectures.
- Enhanced capability to integrate modern AI tools into research and teaching.
- Strengthened exposure to industry practices, deployment models, and practical AI systems.
- Enabled participants to apply AI techniques to multimedia analytics and real-world datasets.

Impact Analysis

The FDP had a **positive impact** on faculty members, as observed through active participation and feedback:

- Faculty participants developed confidence in using advanced AI tools and architectures.
- The FDP encouraged research publications, prototype development, and project-based learning.

- Strengthened industry–academia connectivity through expert interactions.
- Enhanced institutional preparedness for AI-driven innovation and modernization.
- Improved integration of AI concepts into curriculum and laboratory activities.

Feedback and Suggestions

Based on participant feedback:

- Sessions were highly informative, well-structured, and delivered by knowledgeable experts.
- Participants appreciated the relevance of topics to current AI research and industry needs.
- Suggestions included:
  - More hands-on workshops with coding sessions
  - Extended-duration FDPs with deeper practical modules
  - Follow-up FDPs focusing on *deployment and real-time AI*

Overall feedback reflected **high satisfaction** with content, coordination, and resource persons.

Conclusion

The FDP successfully achieved its intended objectives, providing participants with advanced knowledge of next-generation AI architectures and multimedia analytics. The program fostered academic development, research motivation, and industry-oriented learning. The organizing departments express appreciation to all resource persons, participants, and coordinators for their active involvement and contribution to making this FDP a grand success.

Dr. S. Nagarjuna Reddy
Convener of FDP
Professor & Head, CSE

Dr. P. Bhagath
Convener of FDP
Professor & Head, AI&DS