

Workshop

'on GenAI and Agentic Ai'

20 jun 2025

Organized by: Department of Computer Science & Applications

The Department of Computer Science & Applications (PG) organized a Workshop on “GenAI and Agentic Ai “ from **20 jun 2025 for MCA &M.Sc(Ds) students**. The Resource Person is **Dr Rajesh Kumar Verma, Professor of Practice, VNR College of Engineering and Senior Architect AI at CODEBEES Hyderabad.**

Objectives:

Generative AI refers to AI models that can create new content such as text, images, audio, code, or other data formats. The primary objectives are:

1.Content Generation

- Create human-like content (e.g., stories, essays, emails, code, designs).
- Generate visuals, audio, or videos for media, marketing, education, and entertainment.

2.Enhancing Creativity and Productivity

- Assist humans in brainstorming ideas, drafting documents, designing graphics, etc.
- Automate routine creative tasks to save time.

3.Personalization at Scale

- Tailor content (emails, recommendations, interfaces) to individual preferences.

4.Data Augmentation

- Create synthetic data to train other AI models when real data is limited.

5.Natural Language Understanding and Generation

- Improve human-AI interaction through fluent, context-aware dialogue.

Agentic AI Objectives:

Agentic AI refers to AI systems that act autonomously to achieve goals, often through planning, reasoning, learning, and interacting with the environment or other systems. Its objectives are:

1.Autonomous Decision-Making

- Make intelligent decisions without constant human input.

2.Goal-Oriented Behavior

- Work toward defined objectives, adapting strategies as needed.

3.Task Automation and Execution

- Execute complex sequences of actions (e.g., booking travel, managing schedules, controlling robots).

4.Interactivity and Responsiveness

- Actively engage with humans or environments, responding dynamically to new information.

5.Learning and Adaptation

- Improve performance over time by learning from outcomes and feedback.

6.Tool Use and Orchestration

- Use external tools (e.g., web browsers, APIs) to gather information or complete tasks.

Artificial Intelligence (AI)

Artificial Intelligence (AI) is a branch of computer science that focuses on creating systems capable of performing tasks that typically require human intelligence. These tasks include learning, reasoning, problem-solving, understanding natural language, and perception.

Key Areas of AI:

1.Machine Learning (ML): A method where machines improve performance through experience (data). Includes:

- Supervised Learning
- Unsupervised Learning
- Reinforcement Learning

2.Natural Language Processing (NLP): Enables machines to understand and generate human language. Used in chatbots, translation, and sentiment analysis.

3.Computer Vision: Allows machines to interpret and make decisions based on visual input (e.g., images, videos).

4.Robotics: Combines AI with physical machines to perform complex tasks in the real world.

5.Expert Systems: Emulates decision-making ability of a human expert in specific fields like medical diagnosis or legal advice.

Applications of AI:

- Virtual Assistants (e.g., Siri, Alexa)
- Recommendation Systems (e.g., Netflix, Amazon)
- Autonomous Vehicles
- Fraud Detection

- Smart Home Devices

Benefits of AI:

- Automation of repetitive tasks
- Enhanced decision-making
- Improved customer experience
- Faster data processing and insights

Challenges in AI:

- Bias in data and algorithms
- Ethical concerns and job displacement
- Privacy and security risks

Applications of Machine Learning

1. Healthcare

Disease diagnosis (e.g., cancer detection)

Drug discovery

Personalized medicine

2. Finance

Credit scoring

Algorithmic trading

Fraud detection

3. Retail & E-commerce

Recommendation engines

Customer behavior analysis

Inventory management

CONCLUSION:

Artificial Intelligence is transforming the way we live and work by enabling machines to perform tasks that once required human intelligence. With advancements in areas like machine learning, natural language processing, and computer vision, AI is driving innovation across industries. While it offers significant benefits such as increased efficiency and smarter decision-making, it also presents challenges that require responsible development and ethical considerations. As AI continues to evolve, understanding its foundations, applications, and implications is essential for navigating the future of technology.

