1. Introduction

In recent years, Artificial Intelligence (AI) has evolved beyond automation and predictive analytics. One of the most fascinating and rapidly growing branches of AI is Generative AI. This technology enables machines to create content—be it text, images, music, or code—that mirrors human creativity. Generative AI is reshaping industries, education, research, and even daily life, making it an essential topic for computer science professionals and students alike.

2. Seminar Topic Details

Topic Title: Generative AI
Field of Study: Artificial Intelligence and Machine Learning
Seminar Type: Technical
Level: Postgraduate (MCA)

Generative AI refers to machine learning models that generate new data similar to the data they were trained on. Tools like ChatGPT, DALL·E, and Google Gemini exemplify how these models can generate realistic images, coherent text, or even entire codebases, all from user prompts.

3. Topic Summary

Generative AI leverages advanced models such as Generative Adversarial Networks (GANs) and Transformers to produce novel and creative outputs. GANs use a system of two neural networks—a generator and a discriminator—that work together to generate and refine synthetic data. Transformers, like those powering GPT-4, use large datasets to understand and generate human-like language. These models are trained on billions of parameters and find use in chatbots, art creation, drug discovery, game design, and much more.

4. Relevance to MCA Curriculum

Generative AI ties directly into several core MCA subjects:
- Artificial Intelligence – Understanding intelligent systems and machine learning.
- Data Science and Analytics – Working with data for model training and evaluation.
- Programming and Algorithms – Writing and optimizing code for neural networks.
- Software Engineering – Designing and integrating AI features into real-world applications.

Studying Generative AI enhances understanding of real-world applications of AI principles taught in the MCA program.

5. Learning Objectives

By the end of this seminar, attendees will:
- Understand the fundamentals and evolution of Generative AI.
- Learn about GANs, VAEs, and Transformers.
- Explore real-world applications of Generative AI.
- Examine ethical considerations and challenges such as bias and misuse.
- Get insights into how Generative AI tools are developed and deployed.

6. Expected Outcome

Attendees will gain:

- A comprehensive understanding of how Generative AI works.
- Awareness of industry trends and tools in Generative AI.
- Skills to identify areas where Generative AI can be applied.
- A foundation to explore projects, research, or career opportunities in this domain.

7. References

IBM – What is Generative AI? https://www.ibm.com/topics/generative-ai

Simplilearn – What is Generative AI? https://www.simplilearn.com/tutorials/artificial-intelligence-tutorial/what-is-generative-ai

GeeksforGeeks – Introduction to Generative AI. https://www.geeksforgeeks.org/introduction-to-generative-ai/

Analytics Vidhya – What is Generative AI? https://www.analyticsvidhya.com/blog/2023/03/a-complete-guide-to-generative-ai/