ONLINE COURSE ON GENERATIVE AI - PRINCIPLES AND APPLICATIONS(3:0)

Saturdays 10 A.M. to 1 P.M.

Course Coordinator
Dr. Prathosh A P
Electrical Communication Engineering,
Indian Institute of Science Bengaluru.

Objectives of the Course

This course provides an in-depth exploration of deep generative models, including their probabilistic foundations and learning algorithms. Students will learn about various types of deep generative models such as variational autoencoders, generative adversarial networks, autoregressive models, Diffusion Models and Large Language Models and RLHF. The course will cover both mathematical foundations and practical implementations of these models using popular frameworks like PyTorch. Students will gain hands-on experience through lectures and assignments, allowing them to explore deep generative models across various AI tasks.

Syllabus

This course covers Probabilistic Deep Generative Modelling, including Variational Divergence Minimization. It explores Generative Adversarial Networks (GANS, WGANs), Variational Autoencoders (VAES, VQVAE), and Denoising Diffusion Probabilistic Models (DDPMs). The curriculum also delves into Conditional Diffusion, Score-based models, and Large Language Models (LLMs), focusing on sampling, quantization, and reinforcement learning-based alignment methods like PPO and DPO.

Minimum Qualification

Basic undergraduate degree, Basic programming skills in Python,

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