

2-weeks Online Live

FDP | Industrial Training | Internship cum Training on

Generative AI Essentials & Its Applications

(Applications of Generative AI in image, text, and audio generation)

Duration: 30-Hrs (10-days)

Prerequisite: Basic understanding of Python programming

Module 1: Traditional Artificial Intelligence

- Overview of Traditional Artificial Intelligence
- Demystifying Machine Learning
- Unravelling Deep Learning
- Distinguish Discriminative and Generative Models
- Overview of Traditional Artificial Intelligence
- Distinguish Discriminative and Generative Models

Module 2: Generative Artificial Intelligence

- Introduction to Generative Artificial Intelligence
- What are Transformers
- Prompt Engineering
- What are Foundation Models
- Types of GenAI
- Distinction between traditional AI and Generative AI
- Applications of Generative AI in image, text, and audio generation

Module 3: Fundamentals of Neural Networks

- Definition and overview of neural networks
- Biological inspiration for artificial neural networks
- Basic structure of a neural network: neurons, layers, and connections
- Activation functions: sigmoid, tanh, ReLU, softmax
- Forward Propagation and Backward Propagation

Module 4: Large Language Models (LLM)

- Introduction to Large Language Models
- Benefits of Using LLMs
- Examples of LLMs
- LLM Development
- Importance of Tuning LLMs



Module 5: Generative Models

- Understanding GANs in-depth
- Exploring GAN architectures (DCGAN, WGAN, etc.)
- Training strategies for stable GANs
- Applications of GANs in image generation, style transfer, and data augmentation
- **Hands-on:** Implementing a GAN for image generation

Module 6: Variational Autoencoders (VAEs) and LSTM

- Variational Autoencoders (VAEs) deep dive
- Encoder, decoder, and reparameterization trick
- Conditional VAEs and applications
- Long Short-Term Memory (LSTM) networks
- Sequence modelling and handling sequential data
- Applications in text generation and time series prediction
- **Hands-on::** Implementing a VAE and LSTM for sequence generation.

Module 7: Advanced NLP and Transformers Understanding Large Language Models (LLM)

- Explanation of Large Language Models
- Significance in natural language processing and understanding.
- Overview of popular LLMs in the industry (e.g., GPT-3, BERT, T5)
- Applications in various domains
- Architecture of Large Language Models Transformer Architecture
- Explanation of the Transformer architecture as a foundation for LLMs
- Components such as attention mechanisms, layers, and heads
- Discussion on the impact of scaling model size on performance
- Trade-offs and considerations in choosing model sizes
- Different Open-Source Large Language Models
- Overview of Hugging Face Transformers
- Explanation of the library's capabilities.
- Installation and basic usage.
- Working with Pre-trained Models:
- Loading and using pre-trained models from Hugging Face.
- Fine-tuning models for specific tasks.

Module 8: GPT-3 and OpenAI Models

- Understanding GPT-3
- Overview of GPT-3 Architecture and capabilities
- Use Cases and Applications
- OpenAI's Approach to Language Models
- OpenAI's contributions to the field of language models
- Ethical considerations and guidelines

Module 9: BERT and Other Transformer-Based Models

- Introduction to BERT
- Bidirectional Encoder Representations from Transformers
- Applications in natural language understanding tasks



- Transformer-Based Models Comparison
- Comparative analysis of GPT, BERT, and other models
- Strengths and weaknesses of each model

Module 10: Hugging Face Transformers and Prompt Engineering

- Deep dive into Hugging Face Transformers library
- Utilizing pre-trained models for various NLP tasks
- Fine-tuning language models using Hugging Face
- Techniques for prompt engineering in GPT models
- **Hands-on:** Conversational Chatbot using GPT
- **Hands-on:** Fine-tuning a pre-trained model for a specific task

Module 11 : Retrieval-Augmented Generative models (RAGs)

- Understanding the concept of retrieval-augmented models
- Applications of RAGs in NLP tasks
- Implementing a simple RAG model for information retrieval
- **Hands-on:** Building a basic RAG model

Module 12 : Image Generation, Diffusion Model, DALL-E

- In-depth exploration of diffusion models for image synthesis
- DALL-E and its capabilities in generating diverse images
- **Hands-on:** Implementing an image generation model using diffusion

Training Highlights

- 30+ Hours live online Hands-on based learning with Projects.
- **Training includes:** Soft copy of Training material, Training PPT's, Project code & Training Recording.
- 2-weeks **Certificate of completion** in association with **Mechanica IIT Madras**

Who can attend?

- Training is best suitable for Engineering college faculty, Research scholar, Student & Working IT Professional.

To Know More & Register Now: <https://www.eduxlabs.com/gen-ai-training>

EduxLabs Teams

(Esoir Business Solutions Gurugram)

M: +91-7053133032 | 8851533667

Email info@eduxlabs.com | www.eduxlabs.com