

Generative AI

CURRICULUM:

Unit I - Introduction

What is genAI? Chat GPT, Open AI, Project Architecture, Project Workflow and Pipeline, Market Overview & Use cases, Basics of Programming

Lab Component

Create a text-based chat system

Outcome

Tools and Packages Installation Using chat GPT

Unit II - Scripting & Programming

How to write a library, Speech recognition, Artificial Intelligence, User Interaction - GUI and UI elements

Lab Component

Create a GUI based simple chat box interface

Outcome

Working with GUI based applications Adding Voice based components

Unit III - NLP [Natural Language Processing]

Voice Bot vs Chatbot, what is NLP? NLP benefits, How does NLP work? Training & Prediction, Parsing, Tokenization, Challenges of NLP, Sentiment Analysis, what is IoT? Cloud services and various cloud platforms, Token & Channels, API keys, writing data into cloud, reading data from cloud, Working with Dataset

Lab Component

Create a simple chat Bot with NLP dataset

Outcome

NLP Analysis

NLP Training and predictions Datasets and handling data.

Unit IV - Exploring genAI image generation

AI Image generation, Stable Diffusion - Setup & Walkthrough, Introduction to DALLE-2, Mid

Journey Mastery: Create Visually Stunning AI Art, Leonardo AI - Text to Image, Image to Image,

Hyper realism using Leonardo, AI Avatar Generation using Stable Diffusion, Prompts

Lab Component

Creating AI-Generated Video Using DALLE

Outcome

AI Image generation techniques Stable Diffusion, DALLE-2, Leonardo AI

Unit V GenAI - Audio & Video

Generating Audio using AI, MusicLM by Google: Generating Music using AI, Speech toText:

Whisper AI by Runway, setting up the avatar model, Generating AI Avatars, prompts that generate the best results, how to use GEN-1? Why Text to video explode Exploring text- to video tools, generating real-human videos, Make a Video Avatar of yourself

Lab Component

Generate audio using Audio Generating AI tools.

Outcome

Generating Audio using AI Exploring text-to-video tools Generating AI Avatars

Course Duration: 45 Hours

Test Projects:

Generative AI and cloud computing technologies have numerous applications across various industries. Following are the industry use cases for learning Generative AI and Cloud:

1. **Entertainment and Media:** Creating personalized content recommendations using generative AI models trained on user preferences, coupled with cloud infrastructure for scalable content delivery.
2. **Healthcare:** Generating synthetic medical images for training diagnostic AI models, leveraging cloud resources for storage and processing of large datasets while ensuring compliance with privacy regulations.
3. **Retail:** Using generative AI to create virtual try-on experiences for clothing and accessories, hosted on the cloud for seamless access across devices and locations.
4. **Finance:** Employing generative models to simulate market scenarios for risk analysis and portfolio optimization, with cloud-based resources for high-performance computing and data storage.
5. **Manufacturing:** Utilizing generative design algorithms in the cloud to optimize product designs for cost-effectiveness and manufacturability, reducing time-to-market for new products.
6. **Gaming:** Developing procedurally generated game environments and assets using generative AI techniques, hosted on cloud servers for multiplayer gaming experiences.
7. **Architecture and Construction:** Employing generative algorithms to automate the design of structures and optimize energy efficiency, with cloud-based collaboration platforms for architects and engineers.
8. **Marketing and Advertising:** Generating personalized marketing content such as images, videos, and ad copy using AI, and deploying campaigns through cloud-based advertising platforms for targeted reach and optimization.

9. **Education:** Creating interactive learning materials and virtual tutors using generative AI, accessible to students via cloud-based learning management systems for anytime, anywhere learning.
10. **Automotive:** Using generative AI to design and simulate vehicle components for performance and safety, with cloud-based simulations for testing and validation at scale.
11. **Travel and Hospitality:** Generating personalized travel itineraries and recommendations based on user preferences using AI, delivered through cloud-hosted travel booking platforms for seamless planning and booking.
12. **Supply Chain Management:** Optimizing supply chain logistics and inventory management using generative AI algorithms, with cloud-based platforms for real-time monitoring and predictive analytics.
13. **Energy:** Employing generative models to optimize energy production and distribution networks, with cloud-based analytics for demand forecasting and grid optimization.
14. **Telecommunications:** Using generative AI for network optimization and predictive maintenance of infrastructure, leveraging cloud resources for real-time data processing and analysis.
15. **Environmental Science:** Generating climate models and simulations using AI to understand and predict environmental changes, with cloud-based resources for data storage and collaborative research.