



GENESIS: CLOUD-POWERED GENAI & AGENTS

Interview Prep

Preparing for AI-related job interviews with optimized resumes and profiles.

Azure & Databricks

Utilizing Azure cloud services and Databricks for AI development.

LangChain & Databases

Integrating LangChain with vector databases for advanced AI applications.

ML & NLP Essentials

Learning core machine learning and natural language processing concepts.

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AI Project

Creating a personal AI assistant or chatbot to apply learned skills.

Agentic AI & Deployment

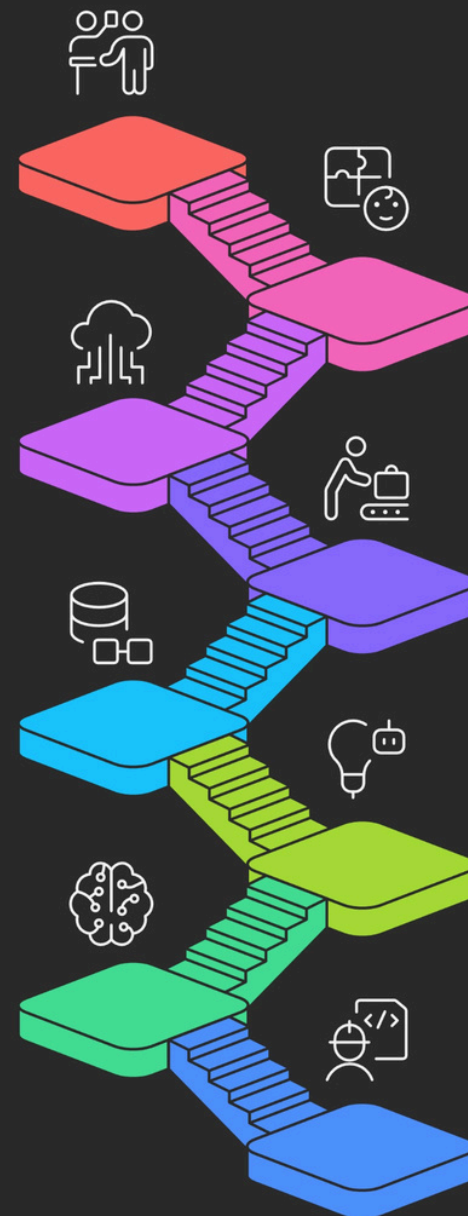
Developing and deploying AI agents using LangChain and Streamlit.

Generative AI

Exploring generative AI models and prompt engineering techniques.

Python Foundations

Building a strong base in Python programming for AI applications.



OBJECTIVES

This course aims to build foundational and applied skills in Python, Machine Learning, and Generative AI with a special focus on Agentic AI and deployment. Students will:

Python Programming

Develop a solid understanding of Python programming for AI workflows.

Machine Learning & NLP

Learn and implement machine learning and NLP models.

Generative AI Fundamentals

Gain practical knowledge of GPT, BERT, and Prompt Engineering.

Advanced AI Systems

Explore LangChain, Vector Databases, and RAG for contextual Gen AI systems.

Agentic AI Development

Understand and build Agentic AI systems capable of reasoning and tool use.

Application Deployment

Deploy AI applications using Streamlit and Hugging Face Spaces.

PROGRAM STRUCTURE OVERVIEW

Module	Title	Duration	Focus
1	Python for AI Foundations	6 Hours	Core Python, Libraries, Data Handling
2	Machine Learning & NLP Essentials	6 Hours	Core ML + NLP + Deep Learning Introduction
3	Generative AI & Prompt Engineering	8 Hours	GPT, BERT, OpenAI APIs, Prompt Design
4	LangChain & Vector Databases	8 Hours	RAG, Pinecone, FAISS, Chatbot Project
5	Agentic AI & Deployment	7 Hours	AutoGPT, LangChain Agents, Streamlit Deployment
6	Azure cloud & Databricks	12 Hours	Azure cloud, Spark,Databricks,Pysparks
7	Interview Preparation	1 Month	Resume building,LinkdIn & Naukri optimization,Job Alerts,References.

VISION BOARD GENESIS CLOUD POWERED GENAI & AGENT ENGINEERING

Devikrishna R **MENTOR**



A seasoned Senior AI & Data Engineer with a strong track record of securing multiple offers from top-tier companies. Expert in building scalable data solutions using Data Factory, Synapse, Databricks, and SQL. Renowned for a strategic approach to interview preparation and real-world project execution. A go-to mentor for aspirants. She has guided 6000+ learners & 1000 + placement

Rohit **MENTOR**



A skilled Technology Strategist and GENAI Mentor with strong expertise in GenAI, Agentic AI, and LLM-based automation. He has guided 1000+ learners and specializes in building practical AI solutions using LangChain, Vector DBs, and cloud-based architectures. Known for his clear teaching style, real-world examples, and strategic career guidance.

Pavithra **VISIONBOARD POINT OF CONTACT**



she is your dedicated VisionBoard Point of Contact, committed to helping you land your dream job. From sharing daily job alerts to providing quick responses to your queries, Pavithra ensures you're always informed and supported

Amitha **TECHNICAL RECRUITER**



She is a skilled Technical Recruiter with a passion for helping candidates land their dream jobs. With deep insights into hiring trends, resume shortlisting

Vimal **ADMIN AND TECHNICAL SUPPORT**



The go-to Admin and Technical Support Lead at Graphy, ensures swift, precise solutions for a seamless learning and mentoring experience.

WEEK-BY-WEEK ACADEMIC BREAKDOWN

WEEK 1: PYTHON FOR AI FOUNDATIONS 3 PART 1 (4 HOURS)

Topics:

- Introduction to Python for AI Applications
- Syntax, Variables, Data Types, and Input/Output
- Control Structures (If-Else, Loops, While, For)
- Functions and Modules
- Data Structures: Lists, Tuples, Dictionaries, Sets

Practical Task: Simple data processing and arithmetic calculator.

WEEK 2: PYTHON FOR AI FOUNDATIONS 3 PART 2 (2 HOURS)

Topics:

- File Handling and Exception Handling
- Libraries for AI: NumPy, Pandas
- Data Analysis using Pandas (Filtering, Grouping, Sorting)
- Data Visualization using Matplotlib and Seaborn

Outcome: Students perform data manipulation and visualize datasets using Python.

WEEK 3: MACHINE LEARNING & NLP ESSENTIALS (6 HOURS)

Core Topics

- Introduction to Machine Learning Concepts
- Supervised vs. Unsupervised Learning

NLP Core Concepts:

- Tokenization and Basic Terminology
- Text Preprocessing (Stemming using NLTK)
- Lemmatization and Stopword Removal
- Parts of Speech (POS) Tagging using NLTK
- Named Entity Recognition (NER)
- One-Hot Encoding and Bag of Words
- Bag of Words Implementation using NLTK
- N-Grams, TF-IDF, Word2Vec
- Skip-Gram - In-depth Intuition

Deep Learning Foundations:

- ANN vs RNN Comparison
- RNN Forward Propagation Through Time
- Simple RNN Backward Propagation
- ANN - End-to-End Deep Learning Workflow
- LSTM and GRU Concepts
- Bidirectional RNN
- Encoder-Decoder Architecture
- Transformer Model Introduction

Mini Project

Mini Project: Build an NLP text classifier using TF-IDF and visualize NER.



GENERATIVE AI & PROMPT ENGINEERING

WEEK 4: GENERATIVE AI & PROMPT ENGINEERING 3 PART 1 (4 HOURS)

TOPICS:

- EVOLUTION FROM TRADITIONAL AI ³ GENERATIVE AI
- UNDERSTANDING GPT AND BERT ARCHITECTURES
- TRANSFORMER MODELS: TOKENIZATION AND ATTENTION MECHANISM
- PROMPT ENGINEERING: ZERO-SHOT, FEW-SHOT, CHAIN-OF-THOUGHT TECHNIQUES

Exercise: Design domain-specific prompts (Education, HR, Finance).

WEEK 5: GENERATIVE AI & LANGCHAIN INTRODUCTION (4 HOURS)

Topics:

- OpenAI API Integration using Python
- Working with GPT-3.5/4 for Text and Chat Modes
- LangChain Basics: PromptTemplate, LLMChain, and Memory

Practical: Build a simple Q&A chatbot using OpenAI API and LangChain.



ADVANCED AI SYSTEMS & DEPLOYMENT

01

WEEK 6: RETRIEVAL-AUGMENTED GENERATION (RAG) & VECTOR DATABASES (4 HOURS)

Topics:

- Concept of RAG (Retrieval-Augmented Generation)
- Understanding Embeddings and Vector Databases
- Using FAISS and Pinecone for Knowledge Retrieval
- Integrating RAG with LangChain for Contextual Q&A

Mini Project: Document-based Q&A chatbot using FAISS.

02

WEEK7:AGENTICAI CONCEPTS(4HOURS)

Topics:

- Introduction to Agentic AI (Memory, Tools, Reasoning, Goals)
- Frameworks: AutoGPT, BabyAGI, AgentGPT
- LangChain Agents: Tool-based and Goal-Oriented Execution
- Multi-Agent Systems: Example of Search + Recommender + Chat Agents

Practical: Create a personal AI assistant with memory and goals.

03

WEEK8:DEPLOYMENT & CAPSTONE PROJECT (3 HOURS)

Topics:

- Streamlit for AI App Interface Development
- Deploying AI Apps on Hugging Face Spaces and Streamlit Cloud
- Final Capstone Project Presentation and Evaluation

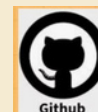
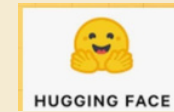
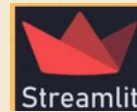
Capstone Project Options:

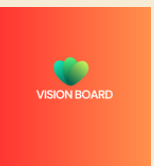
1. Personal AI Assistant using LangChain
2. Resume Analyzer Chatbot
3. FAQ Bot for Education or Business Use Cases

Outcome: End-to-end AI product deployment and presentation.

TOOLS AND FRAMEWORKS

Category	Tools/Frameworks
Programming	Python 3.10+, Jupyter Notebook, Google Colab
Data Science	Pandas, NumPy, Scikit-learn, NLTK, SpaCy
Visualization	Matplotlib, Seaborn
Generative AI	OpenAI GPT, Hugging Face Transformers
Orchestration	LangChain, FAISS, Pinecone
Deployment	Streamlit, Gradio, GitHub





CLOUD DATA & DATABRICKS FUNDAMENTALS

WEEK 9: CLOUD DATA FUNDAMENTALS

- Explore core data concept
 - Explore Relational data on Azure
 - Explore non-relational data on Azure
 - Explore Analytics working on Azure
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WEEK 10: UNDERSTAND DATA AND SPARK ARCHITECTURES

- Cluster Creation, Notebook Analysis
 - Azure Databricks Workspace creation, delta tables, spark SQL, Cluster Management
 - Data Lake
 - Delta Lake
 - Data Lakehouse architecture
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WEEK 11: DATABRICKS CORE FUNDAMENTALS

LAKEHOUSE ARCHITECTURE

- What is Lakehouse?
- How is it different from DW + DL?
- Bronze ³ Silver ³ Gold (Medallion)

DATABRICKS WORKSPACE

- Workspace, Repo, Notebooks
- Jobs, Workflows
- Cluster Types (all-purpose vs job vs serverless)

DELTA LAKE DEEP DIVE

- Delta File format
- Delta Features: Time travel, Vacuum, Optimize, Z-Ordering
- Change Data Feed (CDF)

SPARK FOUNDATIONS FOR DATA ENGINEERING

- Dataframes vs RDDs
- Transformations & Actions
- UDFs, Window functions, Joins, Aggregations
- Databricks Project Implementation

WEEK 12: INTERVIEW PREPARATION

- Resume building
- LinkedIn optimization
- Naukri optimization
- Offer Letters cracking

ASSESSMENT & LEARNING OUTCOMES

ASSESSMENT & EVALUATION

Component	Description	Weightage
Module Mini Projects	Task after each core module	20%
Final Capstone Project	Streamlit or Gradio-based deployed app	30% 50%
Quiz & Discussion	Weekly evaluation and participation	20%

LEARNING OUTCOMES

Upon successful completion, learners will:

