

### **Specialized Tools and Systems**

**Core AI/ML Concepts** 

### 1 PHASE

#### 1. Python Basics

- Data types, control structures, functions, and basic libraries (NumPy, Pandas).
- Exercises and projects: Small scripts to manipulate data and perform simple calculations.

#### 2. SQL Basics

- Understanding of SQL syntax, queries, joins, and database design.
- Practice: Build and query a small database.

**Foundation Skills** 

#### 1. AI/ML Basics

- Understand regression, classification, and prediction models.
- Hands-on: Implement basic machine learning models using scikit-learn.

#### 2. Version Control with Git

- Basics of Git: Commits, branches, merges, and workflows.
- Collaboration: Working on group projects using GitHub or Hugging Face Space

#### 3. Introduction to Streamlit

- Building interactive data applications.
- Project: Create a dashboard for an ML model.

PHASE

### 3 PHASE

### 1.NLP Concepts and Deep Learning

- NLP, Encoding, Bag of words, TFIDF, Word2vec
- Learn tokenization, text embeddings, and fundamental deep learning models.
- Project: Develop a sentiment analysis tool.

### 2.GenAl Fundamentals and Transformer Architectures

- Detailed study of transformer models and their applications in GenAl.
- Starting the Journey Towards Generative AI (GPT4,Mistral 7B, LLAMA, Hugging Face Open Source LLM Models,Google Palm Model)
- Practical: Implement a simple chatbot using transformers.

#### 1.Langchain Fundamentals

- Introduction to LangSmith and LangServe.
- Use case: Automate a customer service process using Langchain.

#### 2.Vector Databases and Semantic Search

- Learn about embeddings, cosine similarity, and indexing.
- ChromaDB, FAISS, pgvector, HANA Vector Engine
- Exercise: Build a semantic search engine for product descriptions.

### 3.Local LLM (Llama3, Mistral)

- Deploying local language models and understanding proprietary indices.
- Hands-on: Set up and query a local LLM.

PHASE



**Advanced AI Techniques** 





# Resume Scanning and Scoring System

Design an Al-driven system that scans, evaluates, and scores candidate resumes, optimizing the recruitment process and candidate selection.

## Vendor Recommendation Engine

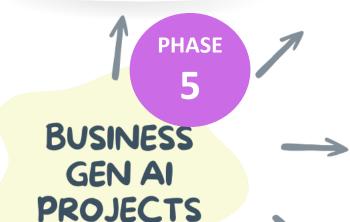
Develop a tool to evaluate and recommend vendors based on various criteria, streamlining procurement and supplier selection processes.

## Customer Segmentation and Recommendation Systems

Create systems that analyze customer data to segment users and provide personalized recommendations, enhancing customer engagement and satisfaction.



Learn to create an ultra-responsive Al chatbot using Groq hardware and Streamlit for an intuitive user interface, demonstrating rapid response capabilities.



# Detecting Duplicate Invoices with Google Gemini

Implement Google Gemini to identify and manage duplicate invoices, increasing the efficiency and accuracy of financial processes.

## Local PDF Interaction and Financial Data Analysis

Explore how to communicate with PDFs and analyze financial data offline using Ollama, enhancing local data processing without relying on internet connectivity.

# Intelligent Database Query Engine

Develop a natural language processing application that converts user queries into SQL commands, facilitating user-friendly database interactions.

### Research Augmented with Azure Al

Utilize Azure OpenAl's capabilities to integrate enriched search functionalities into applications, allowing for comprehensive data retrieval and analysis.





# Enterprise Data Anonymization

Focus on the techniques for anonymizing enterprise data to safely transfer sensitive information from production to QA environments, securing data across various use cases.



PHASE 6

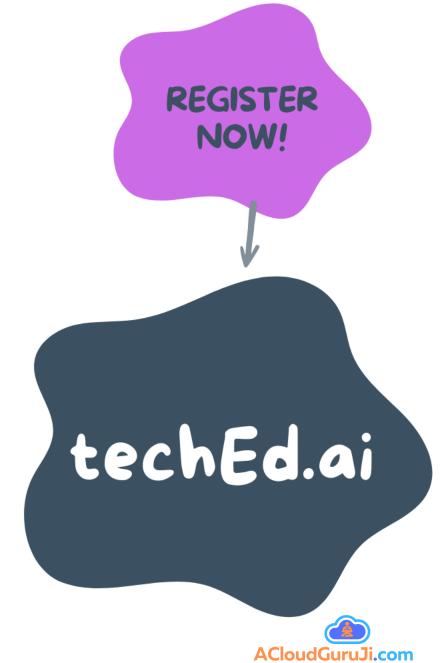
### MLOps and Production

#### MLOps Essentials

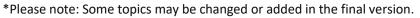
- Learn API basics, containerization with Docker, orchestration with Kubernetes, and CI/CD pipelines.
- Implement: Deploy an ML model with FastAPI and manage it using Docker and Kubernetes.

### Cloud Platforms and Enterprise Integration

- Training on AWS, Azure, and SAP AI solutions (AI Core, AI Launchpad, AI SDK).
- Capstone project: Integrate an ML model into SAP environment using SAP AI tools.







**AI20** 

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