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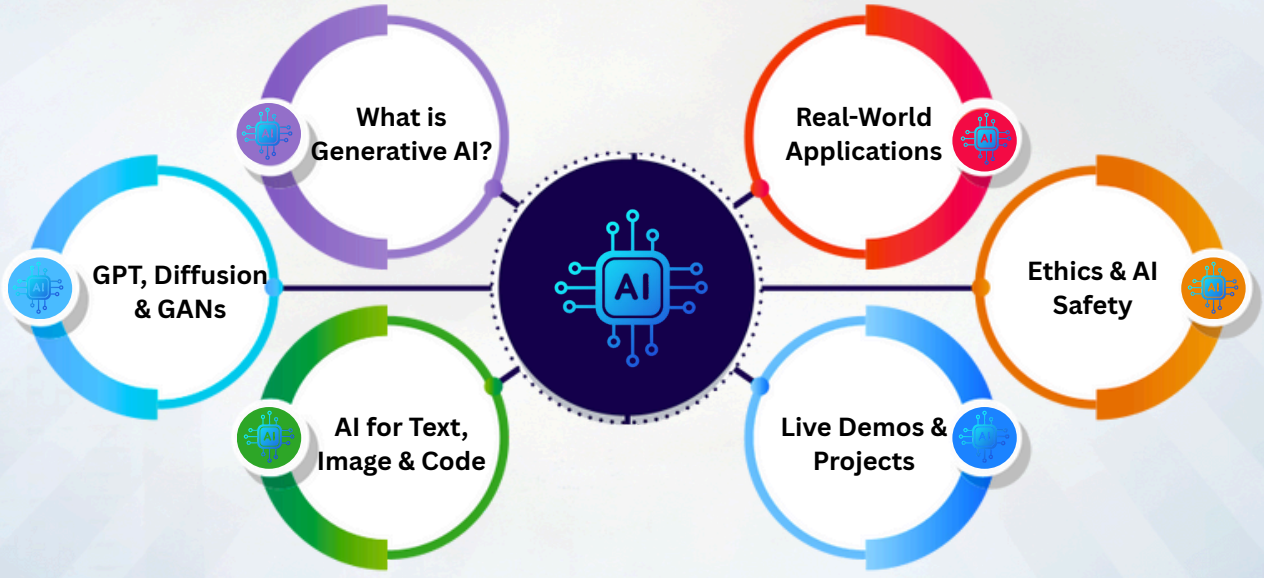
GENERATIVE AI



MODULE-1 : INTRODUCTION

- WHAT IS DATA SCIENCE
- AI & ML INTRO
- WHAT IS GEN AI
- GEN AI USECASES

MODULE 2-PYTHON

- PYTHON BASICS: SYNTAX, VARIABLES, TYPE CASTING, I/O
- BUILT-IN FUNCTIONS, CONTROL STRUCTURES (QUICK RECAP) + INTRO TO NUMPY
- NUMPY DEEP DIVE: INDEXING, VECTOR OPS, MATH
- PANDAS: SERIES & DATA FRAMES – CREATION, EXPLORATION, INDEXING
- PANDAS: FILTERING, SORTING, DATA CLEANING
- PANDAS: GROUPING, AGGREGATION, MERGING
- PANDAS: ADVANCED OPS, DATETIME, EXPORTING
- DATA VISUALIZATION: PANDAS .PLOT + MATPLOTLIB

MODULE 3-MATHS

- DESCRIPTIVE STATISTICS (RECAP & HANDS-ON)
- PROBABILITY BASICS: RULES, CONDITIONAL, BAYES
- SIMULATIONS USING PYTHON
- PROBABILITY DISTRIBUTIONS: BINOMIAL, NORMAL
- INFERENTIAL STATS: SAMPLING, CLT, CONFIDENCE INTERVALS
- HYPOTHESIS TESTING: Z-TEST, T-TEST, P-VALUES
- VISUALIZING GROUP COMPARISONS
- LINEAR ALGEBRA BASICS: VECTORS, DOT PRODUCT
- NUMPY LINEAR ALGEBRA
- CORRELATION, GRADIENTS & OPTIMIZATION CONCEPTS

MODULE 4-MACHINE LEARNING

- LINEAR & POLYNOMIAL REGRESSION (RECAP + CASE STUDY)
- FEATURE ENGINEERING & PREPROCESSING
- LOGISTIC REGRESSION: METRICS, EDA, DEPLOYMENT
- K-NEAREST NEIGHBORS (KNN): DISTANCE & SCALING
- NAIVE BAYES: TEXT CLASSIFICATION
- DECISION TREE CLASSIFIER: RULES & VISUALIZATION
- RANDOM FOREST CLASSIFIER: FEATURE IMPORTANCE
- CROSS VALIDATION & HYPERPARAMETER TUNING
- DIMENSIONALITY REDUCTION (PCA)
- ML PIPELINE INTEGRATION

MODULE 5-DEEP LEARNING+NLP

- NEURAL NET ARCHITECTURE: PERCEPTRON, ACTIVATION FUNCTIONS
- NEURAL NET ARCHITECTURE: PERCEPTRON, ACTIVATION FUNCTIONS • FORWARD PROPAGATION & LOSS FUNCTIONS
- BACKPROPAGATION & OPTIMIZATION (SGD, ADAM)
- CNN: CONV, RELU, POOLING, MNIST CASE STUDY
- CNN TRANSFER LEARNING: VGG, RESNET
- VISION TRANSFORMERS (VIT): SELF-ATTENTION VS CNN
- NLP PIPELINE: PREPROCESSING, TOKENIZATION, TF-IDF
- POS TAGGING & NER WITH SPACY
- WORD EMBEDDINGS: WORD2VEC, GLOVE
- TRANSFORMERS, BERT, GPT + ETHICS

MODULE 6-GENAI+LLMS

- WHAT ARE LLMS AND HOW THEY WORK
- TRANSFORMER ARCHITECTURE BREAKDOWN
- PRE-TRAINING, FINE-TUNING, INSTRUCTION TUNING
- DECODING METHODS: GREEDY, BEAM, SAMPLING
- CONCEPT OF CONTEXT WINDOW, TOKENS, TEMPERATURE
- OPENAI VS HUGGING FACE MODEL ECOSYSTEMS
- EMBEDDING-BASED USE CASES: SEARCH, Q&A
- LANGUAGE MODEL LIMITATIONS & RISKS
- APPLICATIONS OF LLMS IN REAL-WORLD PRODUCTS
- USING LLMS VIA API: SETUP & CALLS
- MINI PROJECT: CREATE A TOOL THAT COMPARES REPONSES ACROSS 2 LLMS (E.G., GPT-3.5 VS CLAUDE)

MODULE 7-PROMPT ENGINEERING

- PROMPTING PRINCIPLES: CLARITY, STRUCTURE, FORMAT
- PROMPT TYPES: ZERO-SHOT, FEW-SHOT, COT, ROLE-PLAY
- TASK-SPECIFIC PROMPTS: SUMMARISE, CLASSIFY, EXTRACT
- PROMPT REFINEMENT AND EVALUATION
- DOMAIN-SPECIFIC PROMPTING (LEGAL, HR, CODE, ETC.)
- USING PROMPTLAYER TO MONITOR AND DEBUG PROMPTS
- GENERATING STRUCTURED OUTPUTS (JSON, MARKDOWN)
- AVOIDING HALLUCINATIONS AND VAGUE OUTPUTS
- PROMPTING FOR TONE AND AUDIENCE
- ETHICAL CONSIDERATIONS IN PROMPT DESIGN
- MINI PROJECT: DESIGN PROMPT CHAINS FOR 3 TASKS – JOB DESCRIPTION PARSER, MEETING SUMMARISER, CHATBOT

MODULE 8-LANGCHAIN MASTERY

- LANGCHAIN ARCHITECTURE: CHAINS, AGENTS, MEMORY
- TOOL USAGE: PYMUPDF, OPENWEATHER, SEARCH APIS
- LANGCHAIN EXPRESSION LANGUAGE (LCEL)
- BUILDING RETRIEVAL + REASONING PIPELINES
- STREAMING OUTPUT, FEEDBACK LOOPS
- USING CUSTOM TOOLS AND WRAPPERS
- INTEGRATION WITH CHROMADB AND OPENAI
- MODULARISING APP LOGIC FOR REUSABILITY
- LANGCHAIN DEBUGGING, LOGGING, PERFORMANCE
- BUILDING AND HOSTING LANGCHAIN APPS
- MINI PROJECT: CREATE A PDF-BASED Q&A ASSISTANT USING LANGCHAIN + STREAMLIT

MODULE 9- FINE-TUNING

- FINE-TUNING VS PROMPT TUNING VS ADAPTER TUNING
- PEFT AND LORA: HOW THEY WORK
- CHOOSING MODELS FROM HUGGING FACE HUB
- PREPARING DATA FOR TRAINING
- RETRIEVAL AUGMENTED GENERATION (RAG) FLOW
- RAG IMPLEMENTATION USING LANGCHAIN
- TESTING RAG FOR ACCURACY AND RELEVANCE

MODULE 10-DEPLOYEMENT & SCALING OPEN SOURCE MODELS

- DEPLOYMENT WITH STREAMLIT AND FASTAPI
- CREATING PRODUCTION APIS WITH FASTAPI
- USING GITHUB ACTIONS FOR CI/CD
- DOCKER BASICS AND CONTAINERISING GENAI APPS
- HOSTING OPTIONS: STREAMLIT CLOUD, EC2, HUGGING FACE SPACES
- COST MANAGEMENT AND SCALING DECISIONS
- MONITORING WITH PROMETHEUS + LOGURU

MODULE 11 : INTERVIEW GUIDE

- REAL TIME USECASES
- RESUME BUILDING
- MOCK INTERVIEWS
- PLACEMENT ASSISTANCE

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COURSES OFFERING

- JAVA FULLSTACK
- PYTHON FULLSTACK
- UI FULL STACK
- LINUX
- CLOUD COMPUTING
- DEVOPS WITH AWS
- DSA
- SYSTEM DESIGN
- SOFTWARE TESTING
- CYBER SECURITY
- DATA SCIENCE
- DATA ANALYTICS

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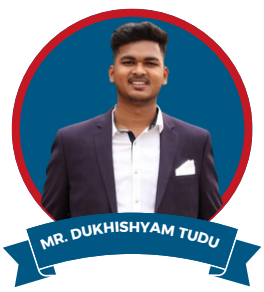

MR. DUKHISHYAM TUDU


MR. RAMANJANEYULU


MR. PRAKASH DAS


MR. MUNIRAJA


MR. OM TAKEY


LAKSHMI KUMARI


KOSURU ANUSHA


KONDETI CHARITHASREE


MR. SATYA


MR. SHAHRUKH KHAN

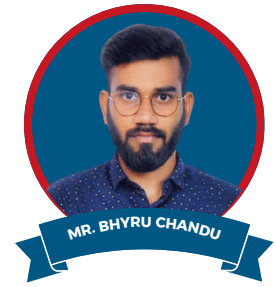

RAKESH KUMAR BEHERA


SARITA DUBBEWAR


MR. SAI KUMAR


MR. PRANAY


MR. SAI KUMAR


MR. BHYRU CHANDU

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