CREDO SYSTEMZ

AGENTIC AI Program

Capstone Projects :

Real Time Business Scenario using Agentic AI

AI Travel Planner Agent

Build an AI agent that takes user preferences (budget, dates, interests) and autonomously creates a full travel itinerary with bookings and recommendations.

Customer Support AI Agent

Design an AI chatbot that can not only answer FAQs but also escalate, summarize, and take actions like updating tickets or sending emails.

Personal Finance Assistant

Create an autonomous AI that connects to banking / expense data, categorizes spending, forecasts bills, and gives budgeting advice.

E-Commerce Product Finder

Develop an AI shopping agent that searches multiple websites, compares products, evaluates reviews, and suggests the best option.

Research Automation Agent

Build an AI agent that scans articles, summarizes findings, and generates structured insights for business or academic research.

Workflow Automation Agent

Implement an AI system that integrates with tools like Slack, Gmail, and Trello to schedule meetings, assign tasks, and send automated reminders.

AGENTIC AI COURSE SYLLABUS

Section 1 : Introduction to Agentic AI & LLM Ecosystem

- What is Agentic AI?
- Role of LangGraph, AutoGen, CrewAI in the ecosystem
- OpenAI vs Azure OpenAI vs AWS Bedrock
- Introduction to foundational concepts: Agents, Tasks, Graphs

Section 2 : Basics of LangChain and LangGraph

- LangChain recap: Chains, Tools, Memory
- LangGraph architecture and why it matters
- Installation, environment setup, and first LangGraph DAG

Section 3 : Exploring LangGraph Core Concepts

- Nodes, Edges, State Machines
- Understanding transitions and handlers
- Building a simple agentic task flow

Section 4 : Python SDK and Node Configuration

- Deep dive into LangGraph Python SDK
- Defining nodes and reactive transitions
- Testing individual components with unit test strategy

Section 5 : Multi-Agent Setup with LangGraph

- Multi-agent interaction via graph state
- Introducing dynamic task allocation
- Conditional logic and loops in graphs

Section 6 : Context Handling in Graphs

- Memory, buffers, and shared state

- Prompt engineering for modular agents
- Using LangChain tools inside LangGraph

Section 7 : Introduction to AutoGen

- AutoGen vs LangGraph
- AutoGen architecture and agent design
- Basic use-cases and sample projects

Section 8 : Building Custom Agents with AutoGen

- Defining roles and communication protocols
- Tool integration in AutoGen
- Building helper agents and supervisor agents

Section 9 : Combining AutoGen and LangGraph

- Orchestrating AutoGen inside LangGraph
- Handling multi-turn conversations
- Error handling and edge case design

Section 10 : Invoice Parsing with LangGraph

- Designing agents for invoice interpretation
- Simulating document variations
- Defining success metrics for extraction

Section 11 : Image Processing Pipeline (OCR)

- Tools: Azure Cognitive Vision, AWS Textract, Tesseract
- Building OCR extractor modules
- Integration with LangGraph pipeline

Section 12 : Intermediate Graph Building

- Data validation agents
- Retry and fallback agents
- Visualizing graphs with tools like Graphviz

Section 13 : Intro to Containerization with Docker

- Docker basics, images, volumes, networks
- Writing Dockerfiles for Python/Node.js agents
- LangGraph inside Docker

Section 14 : Docker Compose and Multi-Service Setup

- Docker Compose YAML structure
- Orchestrating multiple agents/services
- Environment variables and secrets

Section 15 : Testing Dockerized LangGraph Solutions

- Local dev + container testing
- Bind mounts, logging, and debug modes
- Container-to-container communication

Section 16 : Introduction to Kubernetes (K8s)

- Pods, Deployments, Services, ConfigMaps
- K8s vs Docker Compose
- Setup Minikube for local testing

Section 17 : Deploying LangGraph in K8s

- Writing Kubernetes manifests
- Helm vs Kubectl
- Deploying a sample LangGraph pipeline

Section 18 : AutoGen on Kubernetes

- Scaling agents
- Managing state in distributed environment
- Logging and monitoring via Prometheus & Grafana

Section 19 : Azure Cloud Deployment

- Resource Group, App Service, Container Registry

- Deploying Docker container to Azure Web App
- Azure OpenAI API authentication & quota handling

Section 20 : AWS Cloud Deployment

- ECS + Fargate for LangGraph
- Using Bedrock for model inference
- Integration with CloudWatch, IAM, Textract

Section 21 : CI/CD for Agentic AI Pipelines

- GitHub Actions basics
- Docker build & push workflow
- Kubernetes auto-deploy pipeline

Section 22 : Production-Ready Agentic Systems

- Rate limiting & retries
- API Gateway/Reverse Proxy integration
- Secure key management

Section 23 : Logging and Observability

- LangGraph/AutoGen internal logs
- Using OpenTelemetry
- Tracing long-running agent flows

Section 24 : Performance Benchmarking

- Token usage analysis
- Latency optimization
- Cost-performance balance in cloud

Section 25: Advanced Prompt Engineering for Agents

- Structured outputs with ReAct and CoT
- Use of external toolkits (LlamaIndex, Vector DBs)
- Model adaptation and few-shot strategies

Section 26: User Feedback Loops in Agentic Systems

- Capturing feedback on agent outputs
- Self-healing agents with AutoGen feedback loops
- Dynamic policy adjustment

Section 27: Simulation & Testing Frameworks

- End-to-end pipeline testing
- A/B test experiments
- Integration with synthetic data generation

Section 28: Case Study – Enterprise Invoice Agent

- Simulating multilingual invoices
- Table extraction logic
- Structured JSON/Excel output via agents

Section 29: Agent Behavior Tuning

- Prompt templating with LangChain
- Personality config for agents
- Context vs history vs memory tradeoffs

Section 30: Capstone Design Review (Part 1)

- Each participant/team presents their initial design
- Review and feedback from mentors

Section 31: Capstone Development Support

- Debugging session
- Review state transitions
- Test cases writing session

Section 32: Deployment of Capstone to Cloud

- Pick Azure or AWS for deployment
- Secure deployment best practices

Section 33: Monitoring and Final Test Runs

- Review CI/CD
- Final testing of K8s deployment

Section 34: Capstone Presentations – Round 1

- Showcase final projects
- Peer review

Section 35: Capstone Presentations – Round 2

- Continuation of presentations
- Instructor evaluation

Section 36: Graduation and Wrap-up

- Program summary and learning's
- Certification distribution
- Discussion on next-level topics (RAG, LLMOps, etc.)

Tools Covered

LangChain

Microsoft Semantic Kernel

LlamaIndex

AutoGen

CrewAI

Haystack Agents

Pinecone

Weaviate

Milvus

OpenAI GPT

Skills Covered

Reasoning & Planning

LLM Fundamentals

Reasoning & Planning

Multi-Agent Systems

Tool Use & API Integration

Retrieval-Augmented Generation (RAG)

Deployment & Monitoring

Ethical AI & Safety

Earn your AGENTIC AI Course Completion Certificate

Credo Systemz's certificate is highly recognized by 30K Global companies around the world.

WHAT OUR TRAINEE SAYS?

Yuvaraj

4.7 ★★★★½

The AI Project Management course at Credo Systemz was well-organized. Trainers explained with patience and clarity. Very useful for improving AI skills.

Madhumathi

4.2 ★★★★½

Credo Systemz offered excellent AI Excel training. The trainers taught with clarity, practical exercises were given, and the course felt valuable.

Tharun

5.0 ★★★★★

I completed Agentic AI training from credo Systemz, Velachery. The training provided has been excellent and from a real-time perspective. I would recommend anyone looking for Agentic AI training.

Gokulnath

4.9 ★★★★½

Very good institution, I have completed my AI MS Office course with Credo systemz and our Mentor was extremely good and supportive it was very great session throughout the course!!!.

sivasankari

4.0 ★★★★

Very satisfied with Credo Systemz! The AI course gave me confidence. Trainers explained concepts well and provided useful practice sessions. Thank you Credo Systemz.

Rajiv

4.5 ★★★★½

Credo Systemz provided a professional AI Business Analyst course. Content was easy, trainers were friendly, and I gained practical skills effectively.

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