Certified MLOps Professional (CMLOP)

OEM: Global Skill Development Council • Duration: 5 Days (40 hrs) • Code: GSDC-CMLOP

COURSE MODULES & TOPICS

6 CI/CD Workflows

- Design CI/CD pipelines for ML projects
- Automate testing, training, and deployment
- Use GitHub Actions to implement CI/CD
- Manage environment and dependency workflows

7 TFX Pipelines

- Understand the components of TensorFlow Extended (TFX)
- Build scalable ML pipelines for production use
- Integrate data validation and model evaluation
- Use TFX for structured pipeline creation

8 TFX Integration

- Connect TFX with tools like MLflow
- Enhance traceability and observability in pipelines
- Register models from TFX in a centralized registry
- Maintain end-to-end metadata for pipeline stages

9 Model Serving

- Learn different serving paradigms (REST, gRPC)
- Use FastAPI and TorchServe for deployment
- Understand scaling and inference performance
- Implement secure and responsive APIs

10 Monitoring Basics

- Monitor key ML metrics: latency, drift, accuracy
- Use Prometheus and Grafana for live dashboards
- Detect anomalies in model behavior
- Set up alerting and feedback loops

11 Kubernetes Deployment

- Learn core Kubernetes concepts (Pods, Services, Ingress)
- Deploy containerized ML models on Kubernetes
- Scale services dynamically using K8s features
- Use Helm or Kustomize for deployment management

12 LLMOps Foundations

- Explore the lifecycle of LLM-based applications
- Compare traditional MLOps with LLMOps workflows

- Learn foundational tooling for LLMOps
- Set up basic LLM environments using LangChain and Hugging Face

13 Prompt Engineering

- Understand prompt types (zero-shot, few-shot)
- Tune prompts for performance and consistency
- Use prompt chaining and templating strategies
- Evaluate and debug LLM outputs

14 RAG Pipeline Basics

- Learn Retrieval-Augmented Generation concepts
- Use vector databases like FAISS for document retrieval
- Build basic RAG pipelines with LangChain
- Manage sources and indexing strategies

15 RAG Pipeline Expansion

- Improve RAG systems with chunking and embeddings
- Apply advanced filtering and ranking
- Integrate external tools and data flows
- Refine document ingestion and pipeline stages

16 RAG Pipeline Deployment

- Prepare RAG systems for scalable deployment
- Use containerization and orchestration tools
- Optimize retrieval and generation latency
- Monitor serving infrastructure for reliability

17 LLM Deployment

- Evaluate trade-offs of open-source vs API LLMs
- Optimize costs, latency, and throughput
- Deploy models using vLLM, TGI, or API endpoints
- Secure and manage access to LLM endpoints

18 AgentOps Basics

- Understand LLM-powered agents and their architecture
- Learn about agent memory and planning
- Use LangChain to implement basic agents
- Integrate tools and data sources with agents

19 AgentOps Advanced

- Build multi-agent systems with communication protocols
- Use LangGraph to design workflows and decision trees
- Coordinate complex agent interactions
- Debug and evaluate agent outcomes

20 AgentOps + MCP

- Implement AgentOps using MCP (Multi-agent Communication Protocol)
- Manage agent context and role definition
- Use Streamlit to build interactive agent UIs
- Orchestrate agents in production-grade workflows