AI & MLOps for DevOps

Introduction:

This course provides DevOps and platform engineers with a comprehensive introduction to modern AI systems and MLOps practices. It covers foundational AI concepts, large language models (LLMs), model deployment, monitoring, prompt engineering, infrastructure, observability, and security. By bridging the gap between DevOps and machine learning, the course equips professionals to build, deploy, and operate AI-based services at scale with reliability, efficiency, and governance in mind.

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You must know!

Hours:
40 academic hours

Our lecturers:
INT College has a faculty of instructors and training experts, leading in their fields, with extensive practical experience in applying and teaching the subjects in the hi-tech industry in Israel and worldwide.

Eligibility for INT College's Certificate:
An INT College certificate will be awarded to graduates who meet the course's regulations, submit all exercises and assignments, and attend at least 85% of the lessons.

Course Objectives
By the end of this course, participants will be able to:

- Understand key concepts in AI, neural networks, and transformer-based models
- Work with LLMs, including deployment, monitoring, and cost optimization
- Apply effective prompt engineering and manage inference pipelines
- Design robust ML architectures and data pipelines
- Implement MLOps practices like model versioning, CI/CD, and artifact tracking
- Operate ML workloads using Kubernetes, GPUs, and observability tools

- Detect model drift and monitor AI system performance
- Address security, privacy, and cost challenges in AI production systems

Target Audience:

This course is intended for DevOps engineers, MLOps practitioners, platform teams, ML engineers, and technical leads responsible for deploying and maintaining machine learning and AI systems in production environments.

Prerequisites:

Participants should have basic knowledge of software development, DevOps practices, and containerized environments. Prior exposure to machine learning concepts is helpful but not required.

Course Topics:

AI Foundations

- What AI actually is
- Neural networks basics
- Transformers
- Attention mechanism

LLMs & MLOps

- How LLMs work
- Model sizes & flavors
- Datasets
- Training methods
- Model lifecycle
- Deployment strategies
- Monitoring models
- Cost considerations

Prompting & Hands-on

- Prompt basics
- Context windows

- Prompt patterns
- Failure modes
- Local inference
- API-based models

ML Systems & Architecture Fundamentals

- ML systems vs traditional software
- Training vs inference pipelines
- Batch vs online inference
- Stateful vs stateless models
- ML technical debt

Data for ML

- Data pipelines overview
- Feature engineering concepts
- Offline vs online features
- Data validation
- Data drift vs concept drift

Model Management

- Model versioning strategies
- Experiment tracking
- Reproducible training
- Artifact storage

MLOps CI/CD

- CI/CD for ML vs software
- Model promotion pipelines
- Automated testing for models
- Rollbacks & safe releases

AI & MLOps for DevOps

AI Infrastructure

- CPU vs GPU vs TPU
- GPU scheduling & sharing
- Containers for ML workloads
- Kubernetes for ML workloads
- Scaling inference workloads

ML Observability

- Metrics for ML systems
- Model performance monitoring
- Drift detection
- Logging predictions & features
- Alerting on model degradation

LLMOps

- Prompt versioning
- Context management strategies
- Tool calling & orchestration
- Rate limiting & quotas
- Hallucination mitigation

AI Security

- Model security threats
- Data privacy & PII
- Prompt injection attacks
- Secure API usage
- Compliance considerations

Cost & Failures

- Cost drivers in AI systems
- Token-based pricing pitfalls
- Capacity planning for inference
- Common AI production failures

Real-World AI

- Reference MLOps architectures
- LLM-backed application design
- Build vs buy decisions

The college reserves the right to make changes to the curriculum, course duration, teaching staff, and other related aspects at its sole discretion. Any information provided in the college's informational materials shall not be considered binding or constitute any form of commitment by the college.

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