Production-Grade MLOps: Building Reliable Machine Learning Systems Using SRE Principles

AGILE LEADERS
Training Center

AGILE LEADERS
Training Center

Production-Grade MLOps: Building Reliable Machine Learning Systems Using SRE Principles

Course Overview:

This advanced training program connects machine learning engineering with site reliability engineering SRE to create reliable, scalable, and production-ready ML systems. The course covers best practices from software engineering and DevOps throughout the ML lifecycle.

Participants will explore key topics such as ML model monitoring, data reliability, model serving strategies, and incident response, aligned with industry standards like MLOps best practices, machine learning system design, and ML deployment strategies.

Target Audience:

- Machine Learning Engineers
- MLOps Engineers
- Site Reliability Engineers
- Data Scientists
- Data Engineers
- Software Developers integrating ML
- AI Product Managers
- DevOps Professionals entering ML environments

Targeted Organisational Departments:

- Data Science & AI Units
- Engineering & DevOps
- IT Operations & Infrastructure
- Quality Assurance and Risk
- Product and Innovation Teams
- ML Governance & Compliance

Targeted Industries:

- Financial Services
- Healthcare
- E-commerce & Retail
- Telecommunications
- Technology & Cloud Services
- Government & Public Sector

AGILE LEADERS
Training Center

Course Offerings:

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

- Design reliable ML systems using SRE principles
- Build scalable ML production pipelines
- Apply ML observability tools for monitoring and validation
- Define SLOs and SLIs for ML workflows
- Implement robust ML deployment strategies
- Mitigate ML model reproducibility issues and data drift
- Address ML incident response and recovery using structured playbooks
- Apply privacy, fairness, and ethical ML design considerations

Training Methodology:

This program combines instructor-led sessions, peer discussions, case studies, and simulation labs. Participants will work in small groups to design machine learning system architectures, analyse model failures, and establish Service Level Objectives SLOs and Service Level Indicators SLIs.

Course Toolbox:

- Course ebook and system design templates
- Access to monitoring and observability sandbox e.g., Prometheus, Grafana for ML
- Sample datasets for model training and validation
- Checklists for ML reproducibility and ethical AI assessment
- Templates for SLOs and incident response planning

Course Agenda:

Day 1: Foundations of Reliable ML Systems

- **Topic 1:** Understanding the ML Lifecycle and Reliability Challenges
- **Topic 2:** Core Principles of Site Reliability Engineering for ML Systems
- **Topic 3:** Data Collection, Labeling, and Governance Issues
- **Topic 4:** Building Robust ML Training Pipelines
- **Topic 5:** Failure Modes and Production Risks in ML Workflows
- **Topic 6:** Model Development vs. System Design Trade-offs
- **Reflection & Review:** Lessons from the ML Loop and YarnIt Case Study

AGILE LEADERS
Training Center

Day 2: Data Management and Governance in ML

- **Topic 1:** Designing for Data Durability, Versioning, and Access Control
- **Topic 2:** Feature Stores, Metadata, and Labeling Infrastructure
- **Topic 3:** Data Privacy, Security, and Fairness Considerations
- **Topic 4:** Documentation Practices for Human Annotation and Label Quality
- **Topic 5:** Policy and Compliance Impacts on ML Pipelines
- **Topic 6:** Debugging Data-Driven Failures and Edge Cases
- **Reflection & Review:** Review of Governance Failures and Preventive Design

Day 3: Model Validation, Observability, and Monitoring

- **Topic 1:** Defining Quality Metrics for Model Validity and Effectiveness
- **Topic 2:** Offline Evaluation: Metrics, Distributions, and Benchmarks
- **Topic 3:** Online Evaluation: A/B Testing and Shadow Deployment
- **Topic 4:** Building and Using ML Observability Tools
- **Topic 5:** Designing and Measuring ML-specific SLOs and SLIs
- **Topic 6:** Monitoring for Feature Drift, Data Skew, and Model Degradation
- **Reflection & Review:** Observability Strategy and Dashboard Use Cases

Day 4: Scalable Deployment and Incident Response

- **Topic 1:** Model Serving Architectures: Batch, Online, and Edge
- **Topic 2:** Model Deployment Strategies: Blue/Green, Canary, and Rollbacks
- **Topic 3:** Autoscaling, Caching, and Disaster Recovery Patterns
- **Topic 4:** Developing and Executing Incident Response Playbooks
- **Topic 5:** Root Cause Analysis and Postmortems in ML Contexts
- **Topic 6:** Ethical Risks, Bias Failures, and Operational Accountability
- **Reflection & Review:** Simulation of Outage Response and Model Resilience

Day 5: Organizational Integration and MLOps Best Practices

- **Topic 1:** Designing ML Teams and Roles Across the Organization
- **Topic 2:** Organizational Patterns for ML Integration: Centralized vs. Decentralized
- **Topic 3:** Continuous ML Systems and Real-Time Model Updates
- **Topic 4:** Governance, Ethics, and Lifecycle Ownership
- **Topic 5:** Practical Case Studies: NLP Load Testing, Privacy-Aware Pipelines, Ad Click Prediction
- **Topic 6:** Auditing and Compliance in Enterprise MLOps
- **Reflection & Review:** Capstone Presentations and Peer Feedback

FAQ:

Training Course Categories

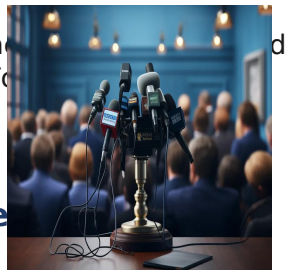
What specific qualifications or prerequisites are required for participants before enrolling in the course?

Ba f ML c with D engin d
so cloud mewo , PyTo
rec

Finance and Accounting Training Courses

Agile PM and Project Management Training Courses

Certified Courses By International Bodies



Communication and Public Relations Training Courses

Ho day is t mbe
re enti

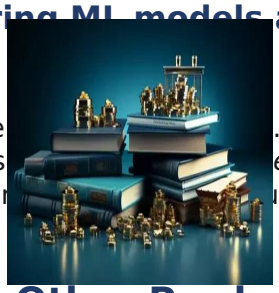
Each day's session is generally structured to last around 4-5 hours, with breaks and interactive activities included. The total course duration spans five days, approximately 20-25 hours of instruction.

What's the difference between monitoring ML models and traditional so s?

Mo goes s like . It inv el
acc data ations earnin
ne oserva t addr ure mo

Data Analytics Training Courses

Environment & Sustainability Training Courses



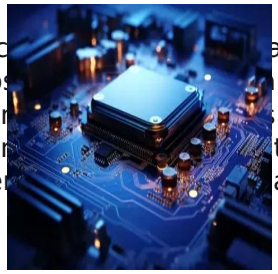
Governance, Risk and Compliance Training Courses

Human Resources Training and Development Courses

How This Course is Different from Other Production-Grade MLOps Courses:

Unlike typical MLOps training, this course emphasises operational excellence. It combines *reliable machine learning* principles with software engineering practices and real-world case studies of ML failures, model drift, and incident recovery.

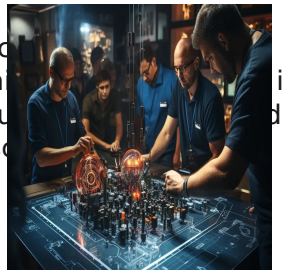
Inc ability ncept Objec
obs nts le uild, d machi in
cor . The es et featu d
cor t, ma ice fo king s
per arnin



IT Security Training & IT Training Courses

Leadership and Management Training Courses

Legal Training, Procurement and Contracting Courses



Maintenance Training and Engineering Training Courses

AGILE LEADERS
Training Center

Training Course Categories

Marketing, Customer Relations, and Sales Courses

Occupational Health, Safety and Security Training Courses

Oil & Gas Training and Other Technical Courses

Personal & Self-Development Training Courses

Quality and Operations Management Training Courses

Secretarial and Administration Training Courses

AGILE LEADERS
Training Center

Training Cities

Accra - Ghana

Amman - Jordan

Amsterdam - Netherlands

Baku - Azerbaijan

Bali - Indonesia

Bangkok - Thailand

Barcelona - Spain

Cairo - Egypt

Cape town - South Africa

Casablanca - Morocco

Doha - Qatar

Dubai - UAE

Geneva - Switzerland

Istanbul - Turkey

Jakarta - Indonesia

Johannesburg - South Africa

AGILE LEADERS
Training Center

Training Cities

Kuala Lumpur - Malaysia

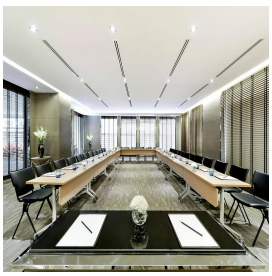
Langkawi - Malaysia

London - UK

Madrid - Spain

Manama - Bahrain

Milan - Italy



Nairobi - Kenya

Paris - France

Phuket - Thailand

Prague - Czech Republic

Rome - Italy

Sharm El-Sheikh - Egypt

Tbilisi - Georgia

Tokyo - Japan

Vienna - Austria

Zanzibar - Tanzania

AGILE LEADERS
Training Center

Training Cities

Zoom - Online Training

WHO WE ARE

Agile Leaders is a renowned training center with a team of experienced experts in vocational training and development. With 20 years of industry experience, we are committed to helping executives and managers replace traditional practices with more effective and agile approaches.

OUR VISION

We aspire to be the top choice training provider for organizations seeking to embrace agile business practices. As we progress towards our vision, our focus becomes increasingly customer-centric and agile.

OUR MISSION

We are dedicated to developing value-adding, customer-centric agile training courses that deliver a clear return on investment. Guided by our core agile values, we ensure our training is actionable and impactful.

WHAT DO WE OFFER

At Agile Leaders, we offer agile, bite-sized training courses that provide a real-life return on investment. Our courses focus on enhancing knowledge, improving skills, and changing attitudes. We achieve this through engaging and interactive training techniques, including Q&As, live discussions, games, and puzzles.

AGILE LEADERS
Training Center

CONTACT US

UAE, Dubai Investment Park First

+971585964727
+447700176600

sales@agile4training.com