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Sign up

Model Lifecycle Management with MLflow Training

2 days (14 hours)

Overview

MLflow enables you to manage the entire machine learning lifecycle in a reproducible manner on Linux servers and cloud environments, without relying on proprietary infrastructure. This open-source platform is ideal for packaging data pipelines, securing multi-user executions, and facilitating deployment on computing clusters.

Our MLflow training aims to make your ML workflows portable and scalable: experiment tracking, model versioning, dependency management, and continuous deployment. You'll learn to navigate between the tracking server and the model registry, use automatic logging features, and build your own validation workflows.

The approach is 100% hands-on: guided workshops on real-world cases, build and deployment demos, and troubleshooting common configuration errors (permissions, environment, network). Deliverables include ready-to-use tracking scripts, a checklist of best practices for production, and sample commands to integrate MLflow into your CI/CD pipelines.

Like all our training courses, this one will introduce you to **the latest stable version** of the technology and its new features.

Objectives

- Track and version ML models
- Deploy and monitor models
- Automate ML experiments

Target Audience

- Data scientists
- ML engineers

Prerequisites

- Knowledge of ML and Python

Technical prerequisites

- At least 8 GB of RAM; 16 GB recommended for running local servers
- Operating system: Linux (Ubuntu, Fedora), macOS, or Windows (with WSL2)
- Python 3.8+ with an environment manager (Conda or venv)
- A working terminal and a code editor (VS Code, PyCharm)
- Libraries to install: mlflow, scikit-learn, pandas

Course Outline for Model Lifecycle Management with MLflow

[Day 1 - Morning]

Fundamentals and Experiment Tracking

- Understanding the ML Lifecycle: Tracking, Projects, Models, and Registry
- Installing and configuring the Tracking Server
- Registering Models and Using Automatic Logging (Autolog)
- Managing Parameters, Metrics, and Artifacts
- Scalability and Enterprise Use Cases
- Hands-on Workshop: Setting up a local server and tracking your first experiments.

[Day 1 - Afternoon]

Search, Comparison, and Advanced Models

- Using the User Interface (UI) to Compare Runs
- Advanced search syntax using tags and identifiers
- Programmatic search via the Python API
- Management of Transformers-based models and Spark Connect integration
- Hosting Custom Models
- Hands-on workshop: Comparative analysis of runs and extraction of optimal hyperparameters.

[Day 2 - Morning]

Governance, Registry, and Authentication

- The Model Registry: Versioning, Annotations, and Documentation Review
- Lifecycle management: transition to Staging and Production
- Security: Authentication configuration and authorization management
- Creating Users and Custom Permissions
- Model validation and signing workflow
- Hands-on workshop: Complete model validation cycle and access security.

[Day 2 - Afternoon]

System Monitoring and Generative AI (LLM)

- Logging system metrics: CPU, RAM, and GPU
- Using MLflow AI Gateway for LLMs (PaLM 2, AI21 Labs)
- New features for evaluating LLMs
- Deployment and real-time monitoring strategies
- Interactions with the cloud and on-premises ecosystem
- Hands-on workshop: Deploying a model with resource monitoring and LLM evaluation.

Target Audience

This training is intended for both individuals and companies, large or small, seeking to train their teams in new advanced IT technologies or to acquire specific business knowledge or modern methodologies.

Assessment upon enrollment

The pre-training assessment complies with Qualiopi quality standards. Upon final registration, the learner receives a self-assessment questionnaire that allows us to evaluate their estimated proficiency in various types of technologies, as well as their expectations and personal goals regarding the upcoming training, within the limits imposed by the selected format. This questionnaire also allows us to anticipate certain connection or internal security issues within the company (intra-company or virtual classroom) that could pose challenges for monitoring and ensuring the smooth running of the training session.

Teaching Methods

Practical Course: 60% Practical, 40% Theory. Training materials distributed in digital format to all participants.

Organization

The course alternates between theoretical input from the trainer, supported by examples and reflection sessions, and group work.

Assessment

At the end of the session, a multiple-choice questionnaire is used to verify that the skills have been properly acquired.

Certification

A certificate will be issued to each participant who completes the entire training program.