

What is MLOPS. Why everyone needs it.

It is a set of practices that combines **Machine Learning (ML)**, **DevOps** (software development and IT operations), and **Data Engineering** to manage the entire Machine Learning lifecycle—from initial experimentation to deployment and continuous monitoring in production.

Think of it this way:

- A **Data Scientist** builds a great ML model (the "ML" part).
- **MLOps** builds the automated pipeline to take that model, test it thoroughly, deploy it reliably to users, and monitor its performance 24/7 (the "Ops" part).

In essence, MLOps takes the principles of **DevOps** (like continuous integration, continuous delivery, and automation) and applies them specifically to the unique challenges of machine learning.

Here are the key reasons why ML Ops is now considered essential.

- Data Dependency: It implements **continuous monitoring** to automatically detect when a model's performance drops or the input data shifts, triggering an alert or even an automated retraining process.
- Scale and speed: It introduces **automation** for the entire ML pipeline (data gathering, training, testing, and deployment). This allows companies to deploy new or updated models in minutes instead of weeks
- Reliability and Consistency: It enforces **versioning** for the code, the data, and the final model itself. This ensures that you can reliably reproduce an exact result from the past—crucial for debugging, auditing, and regulatory compliance.
- Better Collaboration: It provides a **standardized, shared framework and toolset** that bridges these teams, ensuring a smooth handoff from model development to production maintenance.

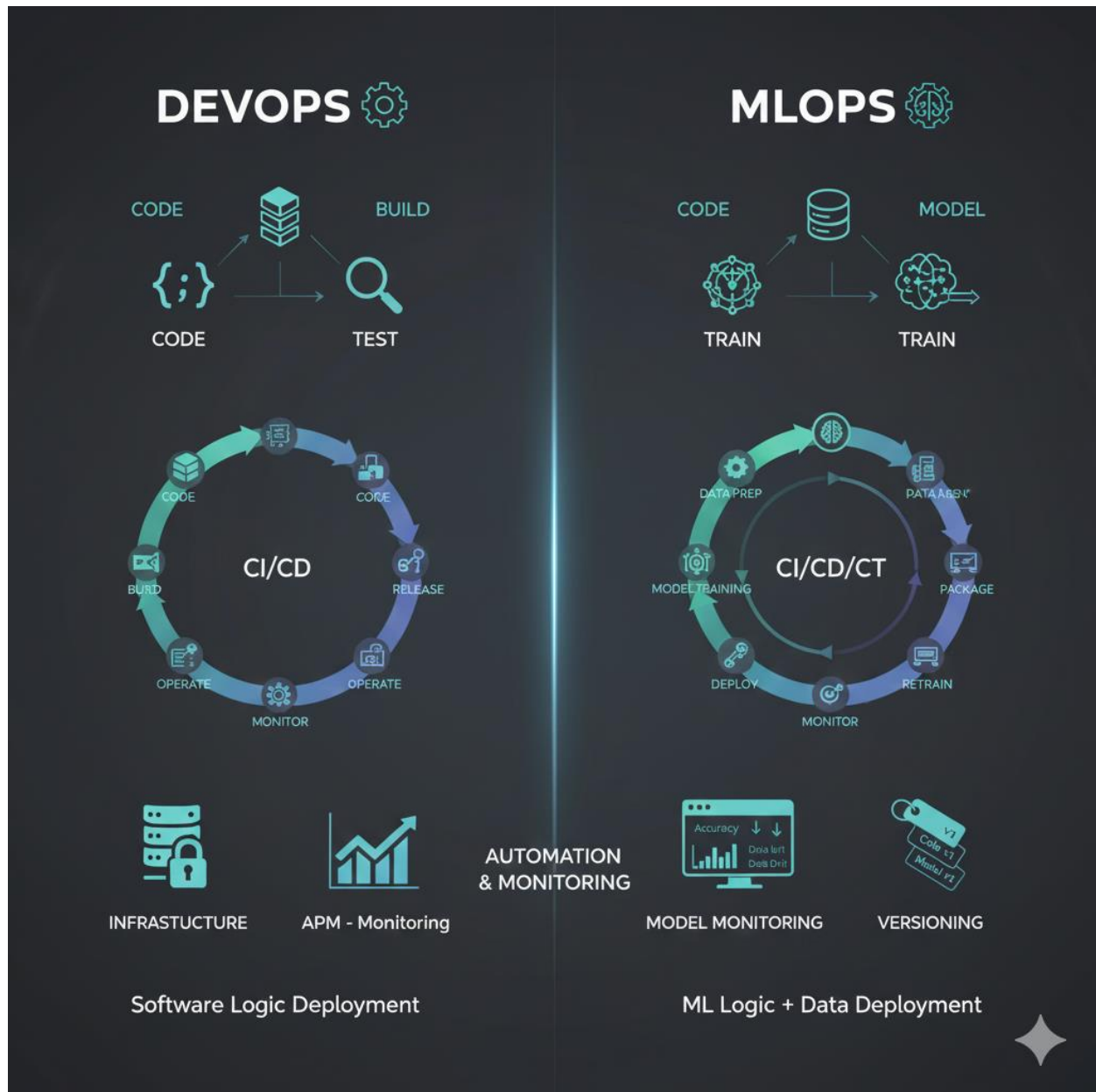
Who is MLOps engineer and what is roles and responsibilities

An **MLOps Engineer** is a specialized role that sits at the intersection of **Machine Learning (ML)**, **DevOps**, and **Software/Data Engineering**. Their primary job is to **design, build, and maintain the automated systems (pipelines) that take a model created by a Data Scientist and reliably deploy, manage, and monitor it in a production environment at scale.**

Roles:

- Automation & Pipeline Development (CI/CD/CT)
- Infrastructure Management & Deployment
- Model & Data Monitoring
- Versioning, Reproducibility, & Governance

Comparing DevOps and MLOps



Phases of MLOps lifecycle:

MLOps Continuous Life Cycle

