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# Artificial Intelligence

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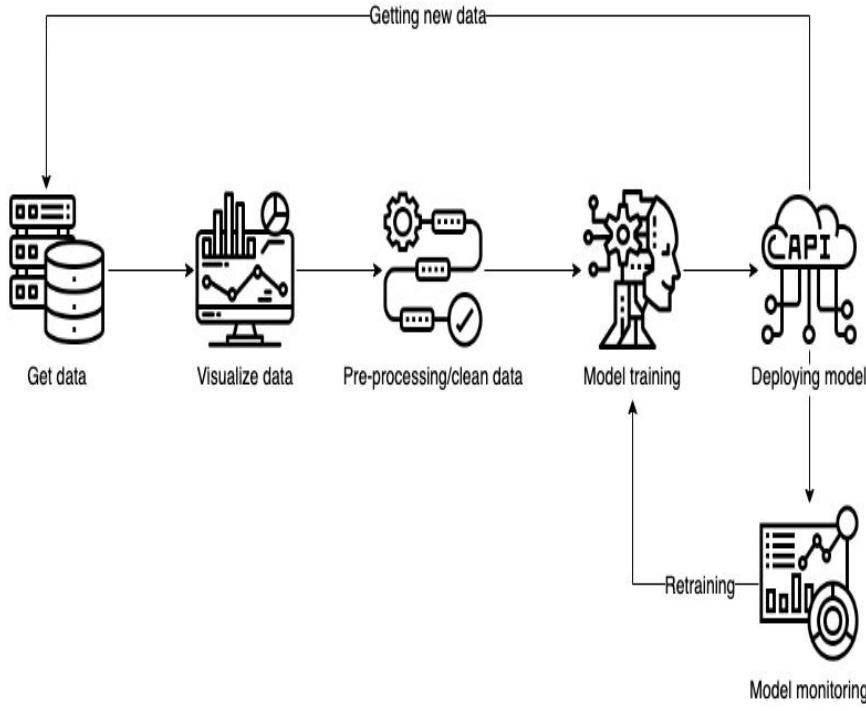


# AI, ML, and MLOps

*MLOps: Bridging ML and DevOps*



# What is MLOps?



# MLOps: Bridging ML and DevOps

**Definition:** MLOps = Machine Learning + DevOps + Data Engineering.

Practices to automate, monitor, and manage ML workflows.

## Why MLOps?

🔧 **Reproducibility:** Track code, data, and models.

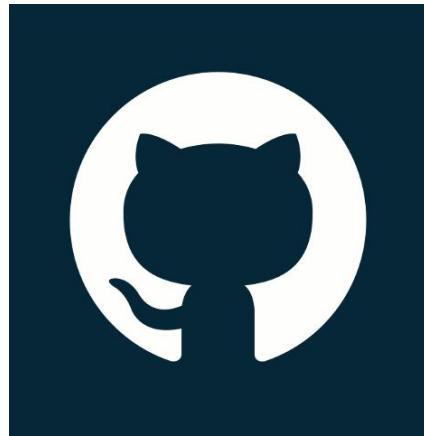
🚀 **Scalability:** Deploy models to handle real-world demands.

📈 **Monitoring:** Detect model drift and performance decay.



# MLOps Tools Overview

# Tools for End-to-End ML Workflows



**mlflow**

The Apache Airflow logo, which features a stylized four-petaled flower or fan shape in red, blue, green, and cyan.

Apache  
Airflow

# Tools for End-to-End ML Workflows

## GitHub

*Code version control & collaboration.*

*Example: "Merge feature-branch into main."*

## DVC (Data Version Control)

*Track datasets like code.*

*Example: dvc add data/raw → dvc push.*

## DAGsHub

*Unified platform for ML projects (Git + DVC + MLflow).*

*Example: Visualize experiments and data lineage.*

## Airflow

*Orchestrate workflows with DAGs.*

*Example: Schedule daily model retraining.*

## MLflow

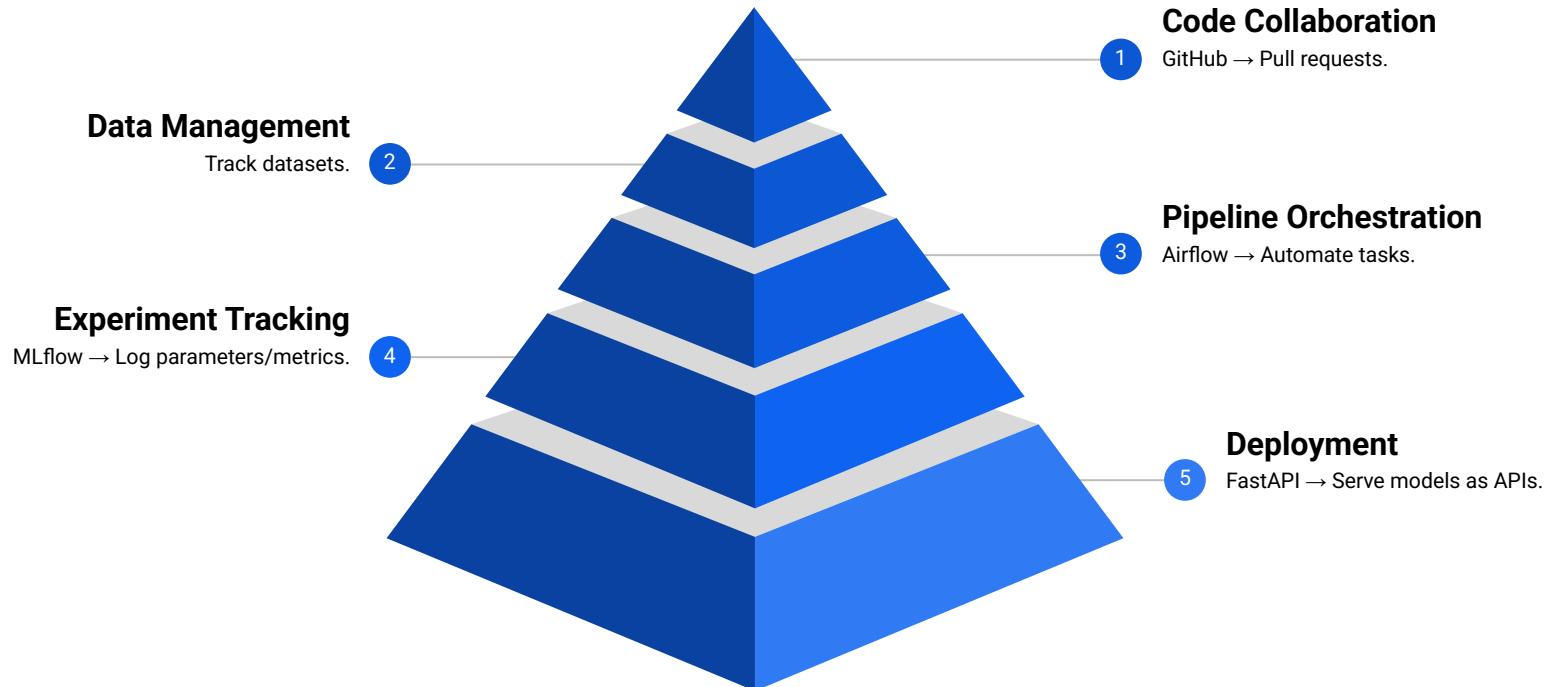
*Experiment tracking, model registry, deployment.*

*Example: Log metrics with mlflow.log\_metric("accuracy", 0.95).*



# MLOps Tools in Action

# How Tools Fit into the ML Lifecycle





# Why MLOps Matters

# The Impact of MLOps

<i>Without MLOps</i>			<i>With MLOps</i>
Manual, error-prone	✗	✓	Automated pipelines
No experiment tracking	✗	✓	Reproducible workflows
Models fail in production	✗	✓	Scalable monitoring
Collaboration chaos	✗	✓	Git + DVC for teamwork

# Any questions?