# Introduction to MLOps

## Workshop

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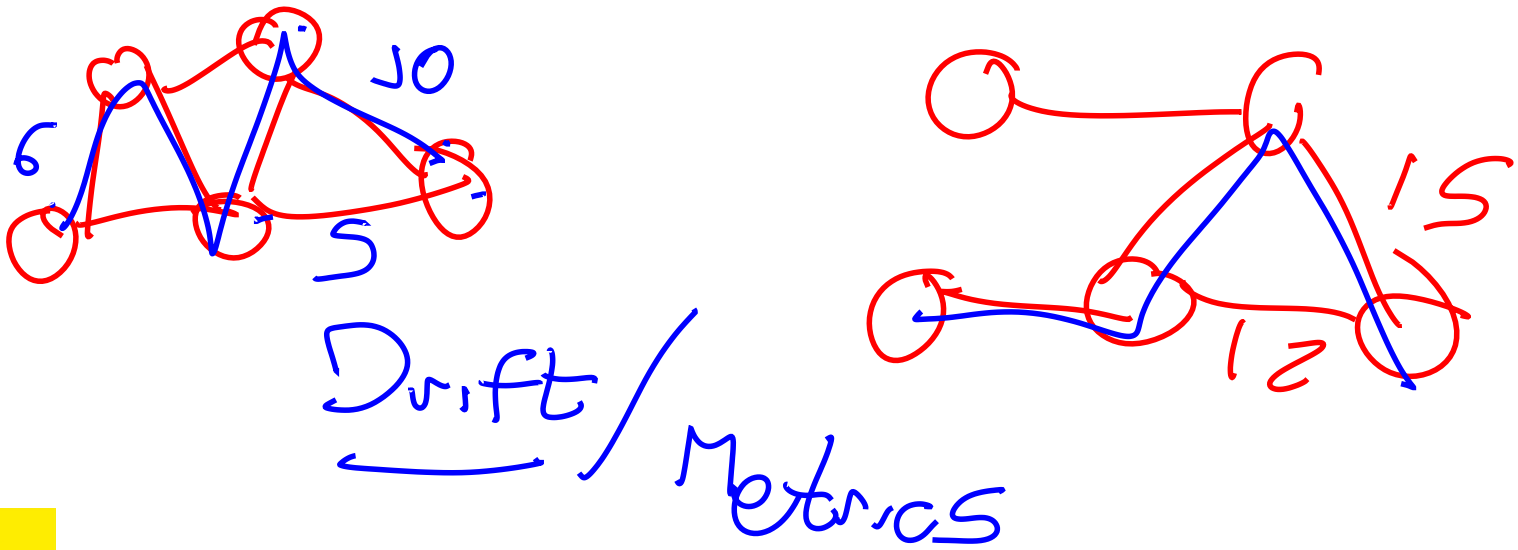
# What is MLOps?

## MLOps Definition

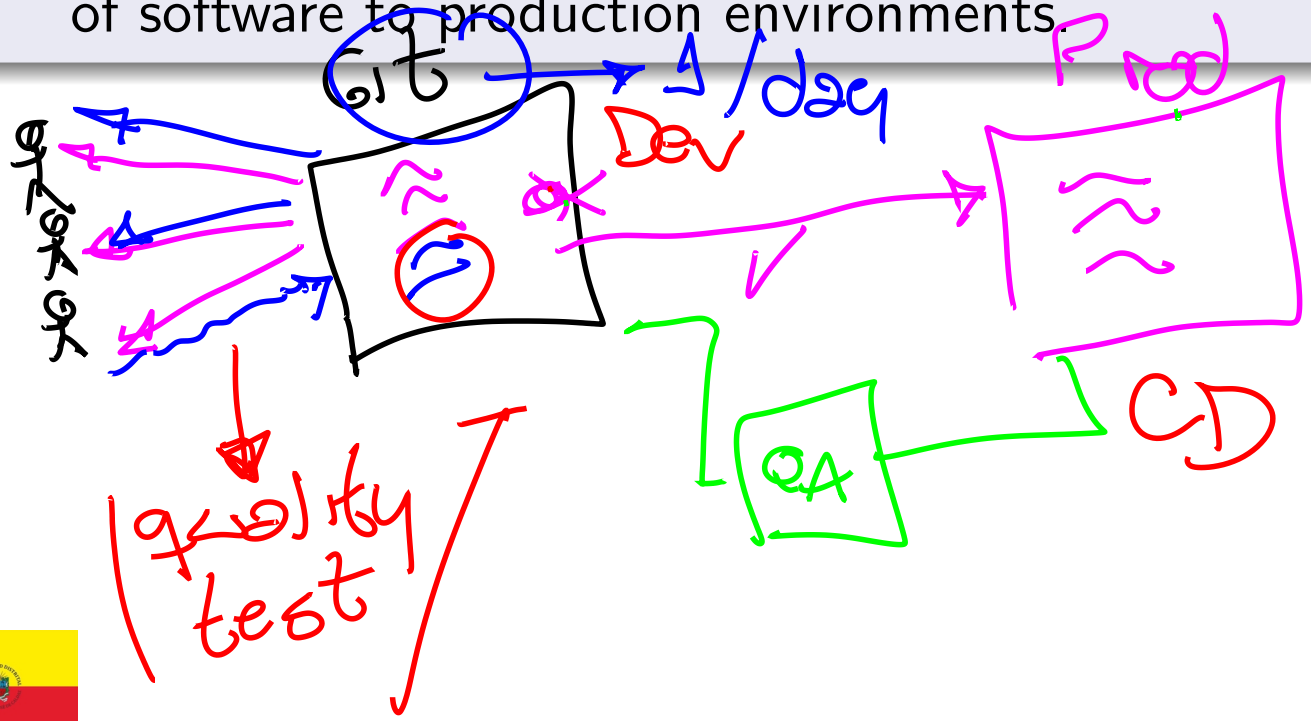
- **MLOps** is a practice for collaboration and communication between data scientists and operations professionals to help manage the production ML lifecycle.
- It is a set of practices that aims to **unify** ML system development (Dev) and ML system operation (Ops).



# Continuous Integration/Continuous Delivery (Deployment)

## CI/CD

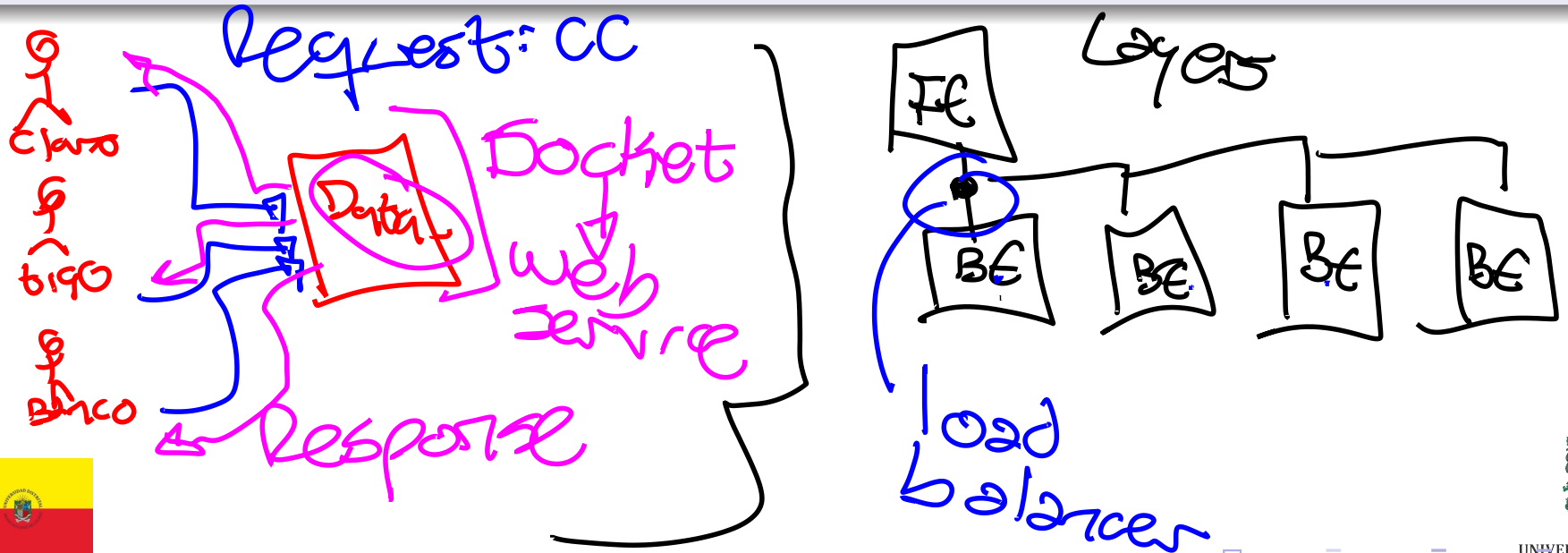
- Continuous Integration (CI) is the practice of automating the integration of code changes from multiple contributors into a single software project.
- Continuous Delivery (CD) is the practice of automating the delivery of software to production environments.



# Servling Services with High Availability

## SaaS

- Software as a Service (SaaS) is a software licensing and delivery model in which software is licensed on a subscription basis and is centrally hosted.
- High Availability (HA) is a characteristic of a system that aims to ensure an agreed level of operational performance, usually uptime, for a higher than normal period.



# Observability and Monitoring

## Observability

- Observability is a measure of how well internal states of a system can be inferred from knowledge of its external outputs.
- Monitoring is the process of collecting, analyzing, and acting on metrics.

Performance ~ cloud $$

Metrics Errors Logs

Metadata ~ Stats ~ Trends

Open Telemetry

MLFlow Flower

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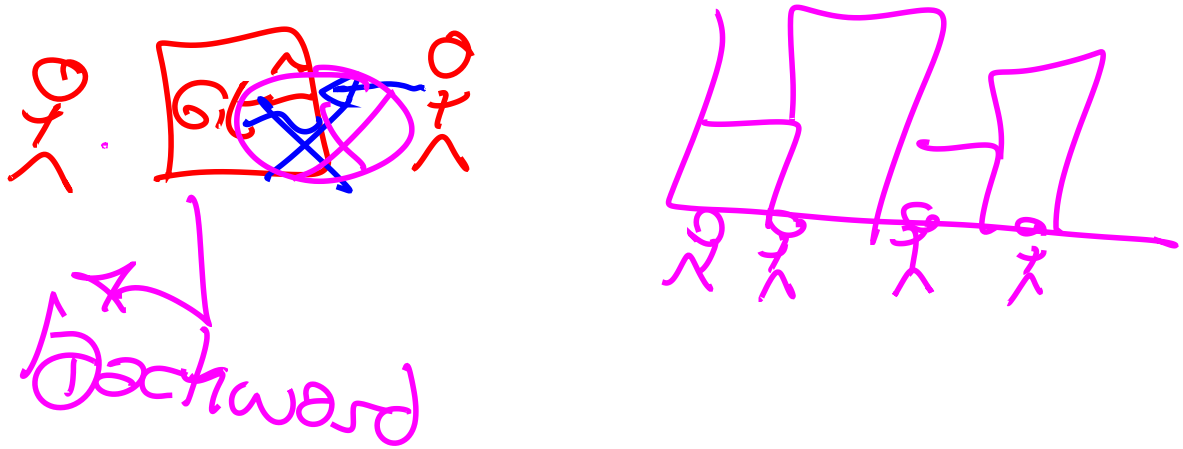
# Creating a Project with GitHub-Actions

## Steps

- GitHub is a code hosting platform for version control and collaboration.
- GitHub Actions is a CI/CD tool that allows us to automate the deployment process.
- Secrets are encrypted environment variables that you create in a repository.



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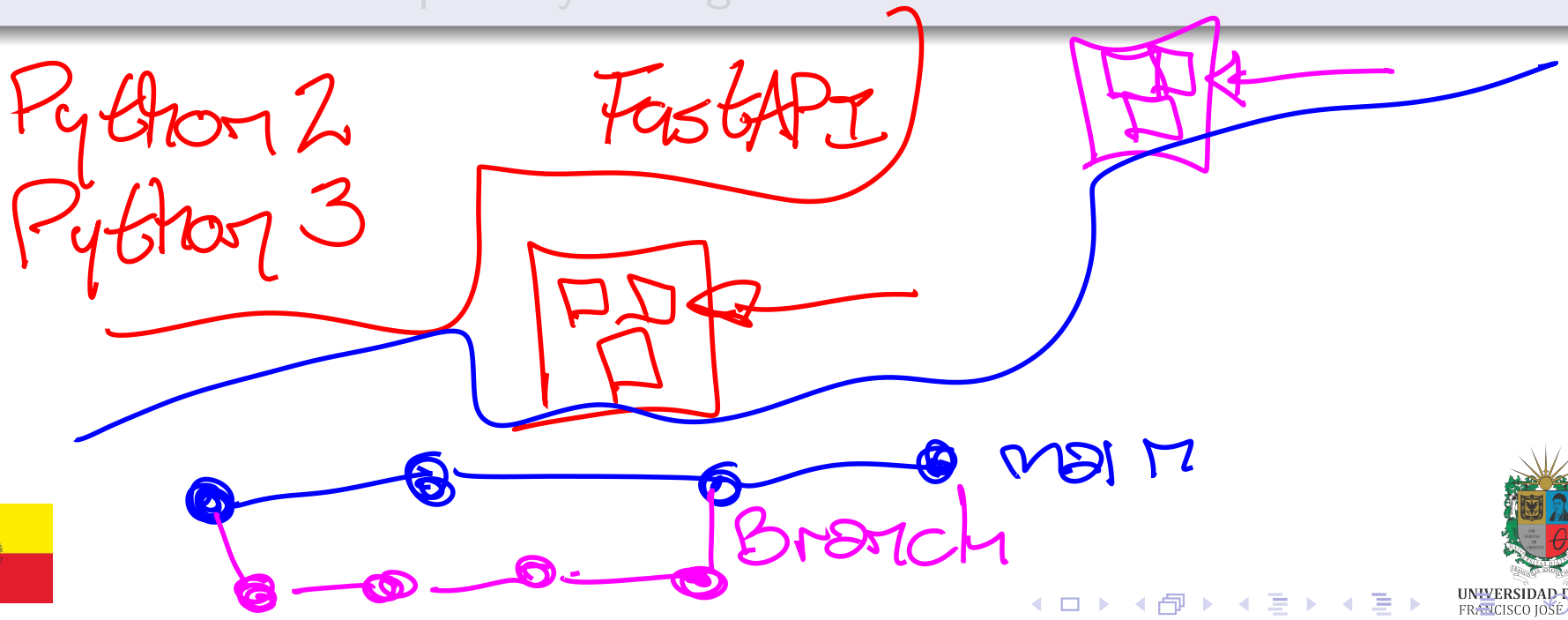
- Poetry is a tool for dependency management and packaging in Python.
- Makefile is a simple way to organize commands and tasks.



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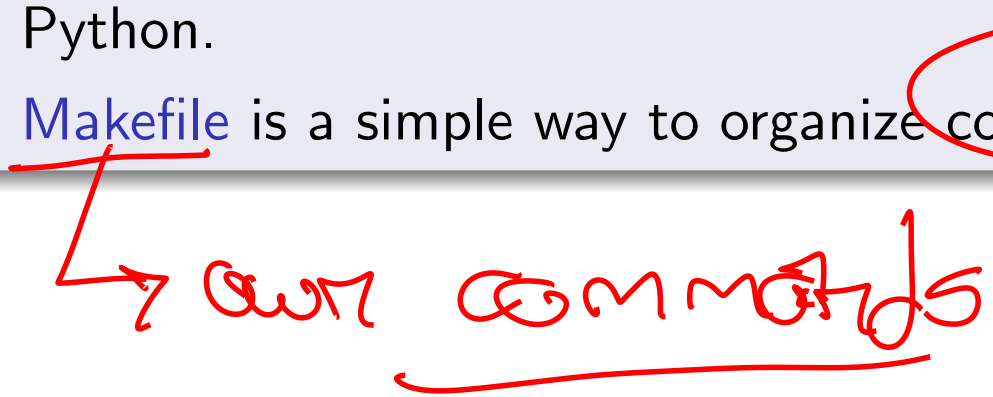


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# Creating a simple ML model with XGBoost

## Steps

- Kaggle is a platform for predictive modeling and analytics competitions.
- XGBoost is an open-source software library which provides a gradient boosting. Let's play with The Titanic.
- Define some simple error metrics just to be sure about your model performance.

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# Serving a ML model with FastAPI

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- FastAPI is a modern, fast (high-performance), web framework for building APIs with Python 3.6+ based on standard Python type hints.
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- We could check code by format and good practices.

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# Deploying a ML model to GCP using GitHub Actions

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- GitHub Actions is a CI/CD tool that allows us to automate the deployment process.

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# Thanks!!

# Questions?

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