MLflow-Research

Introduction

MLFlow is a platform to manage machine learning model lifecycle, including experimentation, training, and deployment. It is highly customizable to developers and engineers who are proficient in defining the metrics needed for observibility. MLFlow is a platform where models are registered, experiment or model trainings are tracked and versioned. MLflow also offers simple user interface to visualize the metrics.

MLFlow has a MLFlow tracking server. The purpose of this server is to curate and safeguard the backend of MLFlow. Every time an application executes the MLflow library, whether it's training or inference, metrics defined in the application will be logged to the server. If there are artifacts such as model files, these artifacts are also logged and stored at the server.

MLflow client set up

In the application code, one may configure MLflow to point to the tracking server and then log metrics to it:

```
mlflow.set_tracking_uri("http://your-server-ip:5000")  # Replace with your
server IP
mlflow.set_experiment("openai_text_generation_monitoring")
```

View metrics in the MLFlow UI

Once the server is up and running, open the MLflow UI at http://your-server-ip:5000. In the UI, you can:

1. Select the Experiment: Choose your experiment by their name
2. View Runs and Metrics: Each API call will log a new run, where you can view the metrics over time.
3. Create Line Graphs: MLflow allows visualizing these metrics as line graphs. One may:
    - Select metrics defined and calculated in the application code.
    - View trends over runs to understand how performance varies over time.
    - Adjust the x-axis to run index, time, or another metric.

Overall, as long as the metrics may be quantified programmitically, these metrics may be tracked and displayed by the MLFlow UI.