**Project Outline**

1. Dataset Exploration and Preprocessing:

* Load the "house.csv" dataset and perform exploratory data analysis (EDA).
* Handle missing values, outliers, and any data quality issues.
* Visualize key insights from the dataset.

2. Machine Learning Model:

* Choose a regression model to predict house prices based on the dataset.
* Split the dataset into training and testing sets.
* Train the machine learning model using MLflow for experiment tracking.
* Evaluate the model's performance and tune hyperparameters.

3. Dockerizing the Machine Learning Model:

* Create a Dockerfile for packaging the machine learning model into a Docker container.
* Build and test the Docker container locally.
* Push the Docker image to a container registry (e.g., Docker Hub).

4. Kubernetes Deployment:

* Create Kubernetes manifests (Deployment, Service, etc.) for deploying the machine learning model as a microservice.
* Deploy the application on a local Kubernetes cluster (e.g., Minikube) and verify its functionality.

5. Kubeflow Integration:

* Integrate the machine learning model into Kubeflow Pipelines.
* Create a Kubeflow pipeline that includes steps for data preprocessing, model training, and model deployment.
* Execute the Kubeflow pipeline and monitor the progress.

6. Prometheus Monitoring:

* Instrument your microservice to expose relevant metrics (e.g., response time, error rate).
* Configure Prometheus to scrape metrics from the deployed microservice.
* Create custom Prometheus alerts for important events.

7. Grafana Dashboard:

* Set up Grafana and configure it to visualize metrics from Prometheus.
* Create a comprehensive Grafana dashboard that monitors various aspects of the machine learning model and Kubernetes cluster.