Real Time Price Forecasting
(MLOps/capstone)

Presented by: Rob Wygant

Overview

- Project description and goals
- ML System requirements
- ML System design
- Infrastructure
- Demonstration
- Future work

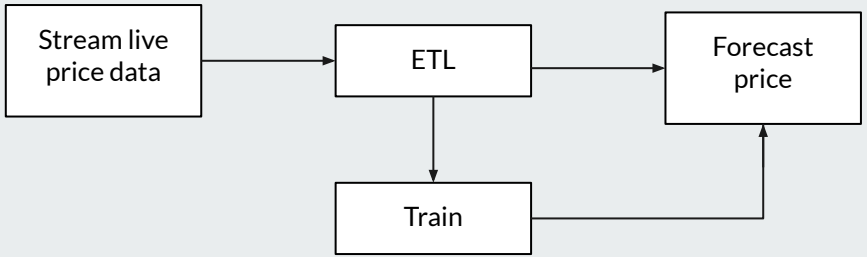
Project Description and Goals

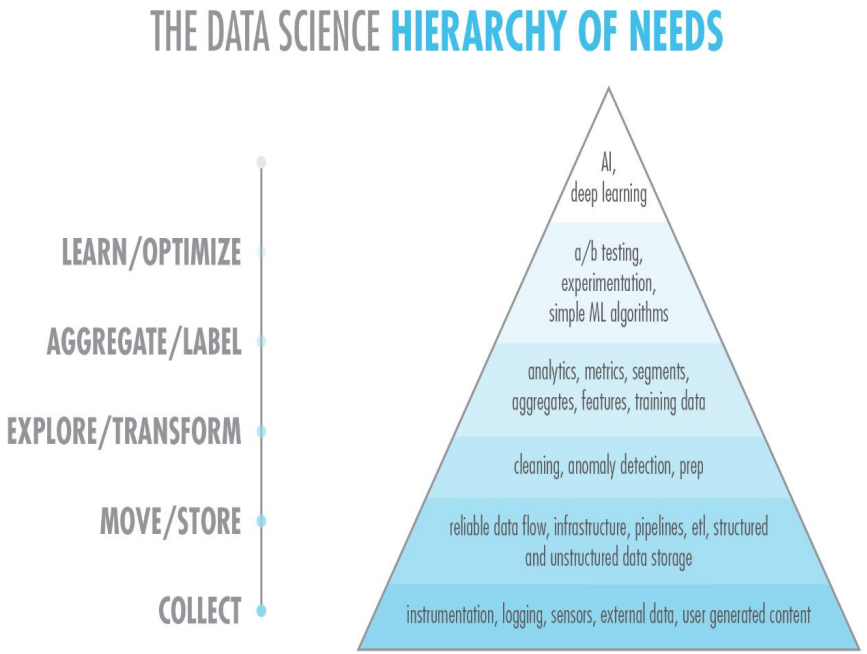
- **Description**: MLOps system design and build for real time Bitcoin price time series forecasting

- **Goals**
  - Deliver an end to end MLOps framework to predict and train time series data
  - Utilize best practices in MLOps system design
  - Deploy on cloud computing infrastructure

ML System requirements

1. Stream real time price data
2. Feature store
3. Automated ETL
4. Automated grid search and train
5. ARIMA batch forecasting
6. Model directory/performance

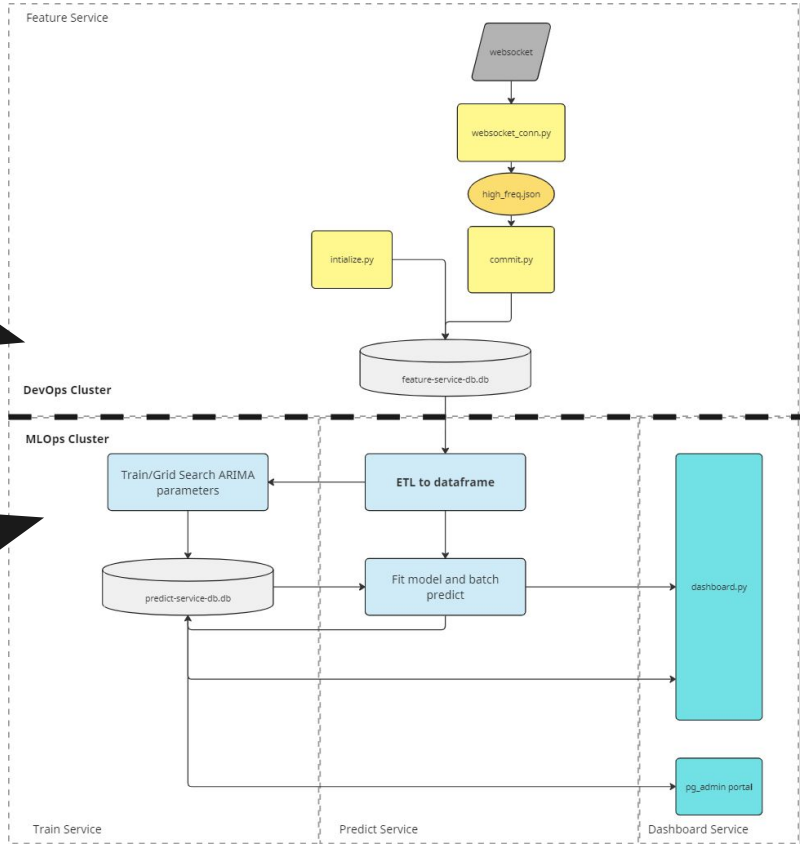




ML system design

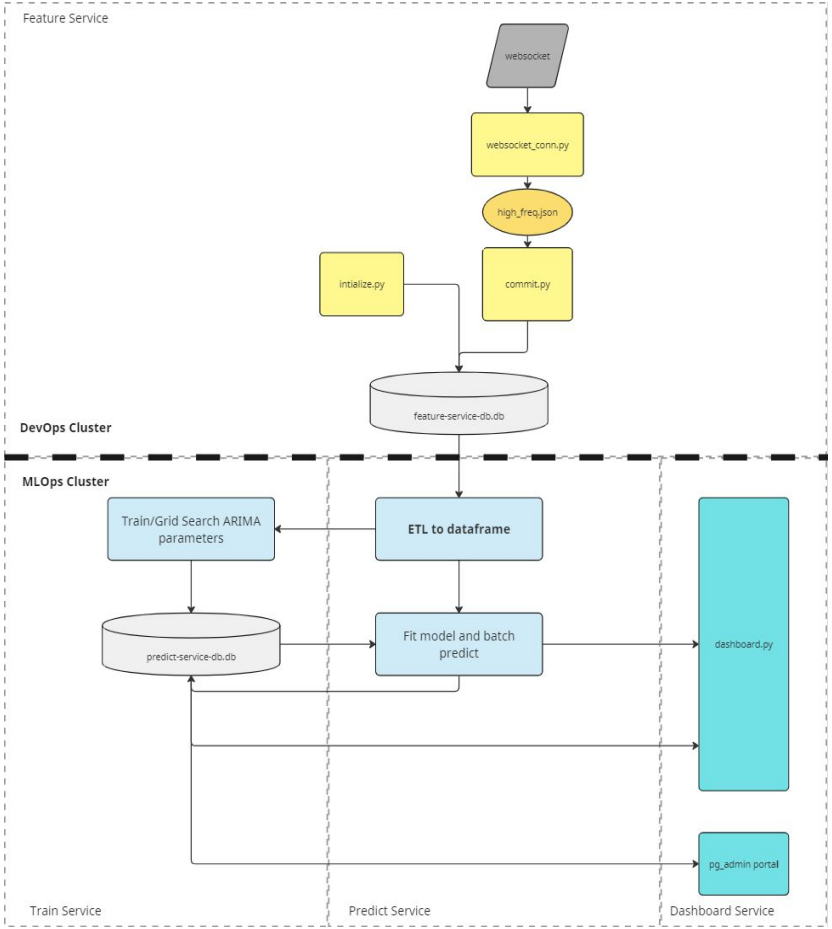
DevOps

MLOps

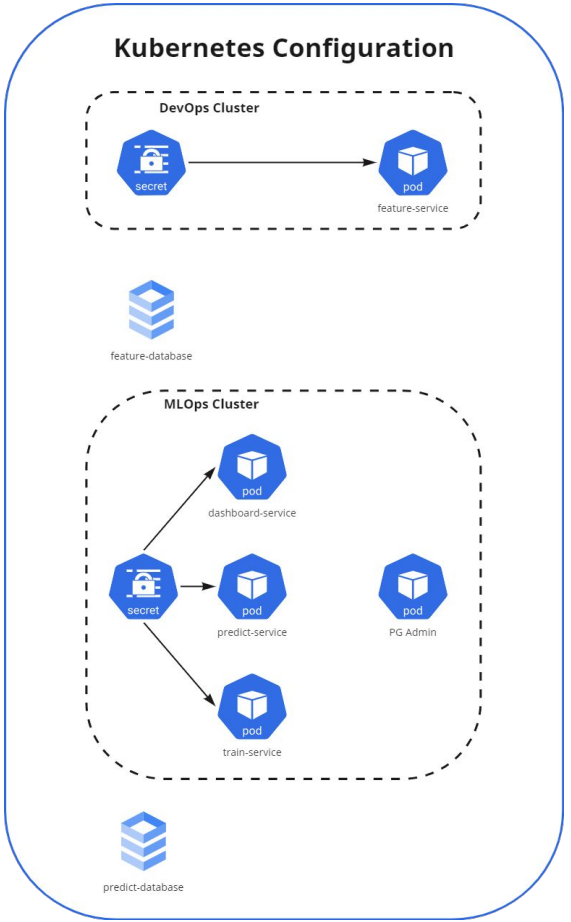


Cloud Infrastructure

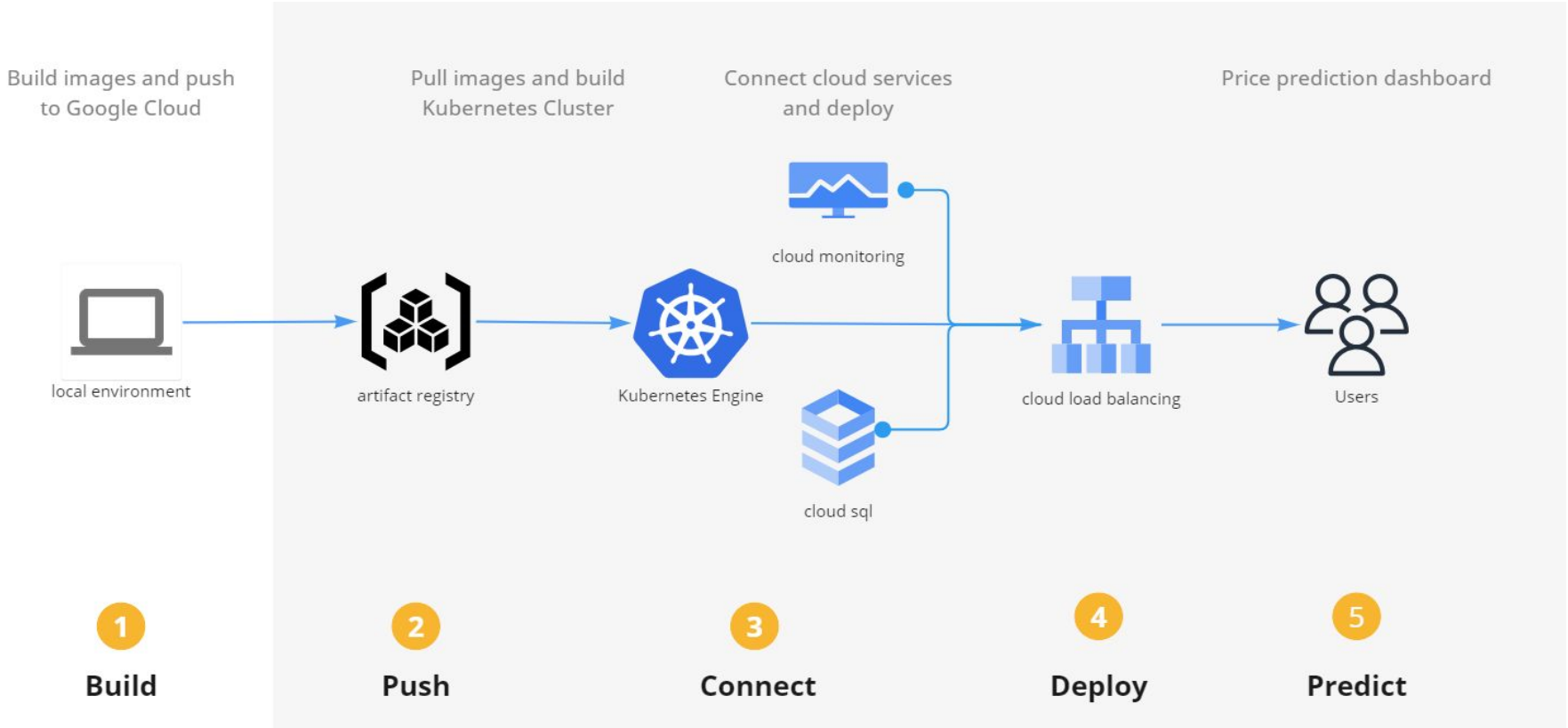
1. Cloud computing (Google Cloud)
2. Containerized application (Docker)
3. Cloud SQL instance integration (Postgres SQL)
4. Container orchestration (Kubernetes)
5. Server monitoring outputs (Google Cloud)



container configuration



Build and deploy



Demonstration

- Link: http://34.134.207.164:8080/

Future Work

- Add macro and asset specific features to the feature store for ML prediction capability
- Automate the pipeline deployment process to handle multiple models
- Optimize prediction frequency
- Integrate Prometheus and Grafana for server monitoring
- Refactor the code base and simplify
- Focus more on prediction modeling and performance