Appfolio Vision Statement

Project Name: Transaction Anomaly Detection

Team Name: Fraud Busters

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Project Description

Project Overview

We are planning to solve the problem of anomalous transactions by building a machine learning model and deploying it as a service to detect anomalies in areas like the history of transactions and location to determine the validity of a transaction.

Why is this important?

As a real estate management platform, AppFolio customers make millions of transactions. Fraudulent transactions made on an account can often go undetected, as most users may not check their account on a regular basis unless they receive an alert from AppFolio. Failure to detect anomalous transactions can be expensive to reconcile for both the company and its customers.

Existing Solutions

- Fraudulent transactions are often detected through a machine learning model that is trained on historical data to classify new transactions as fraudulent or not. There are also rule-based systems where the rules are hard-coded to classify transactions such as setting limits on the amount per transaction.
- One example is Amazon, which provides a general Fraud Detection Service to identify suspicious online payments.
- A second example is Unit21 which offers transaction monitoring that identifies and flags any activity that is unusual or suspicious.

- Our project aims to provide a more customized model trained specifically for the unique patterns in real estate transactions. Additionally, training the model in-house may provide better privacy, security, and cost-efficiency.

Outcome

- Build a service for Appfolio that identifies and alerts employees or developers when a new fraudulent transaction occurs.

Milestones

1. Complete data preprocessing
    - Potentially label the data using scripts on fraudulent vs non fraudulent
2. Choose the best machine-learning approach
    - Unsupervised vs supervised learning
3. Find the best ML model to perform yes or no detection based on data we have
4. Train the ML model on company anonymous data
5. Test to make sure the model reaches the correct accuracy with test data
6. Build and deploy a service for AppFolio to interact with the ML model easily
    - Potentially integrate it into the production side

Technologies

- Python
- ML algorithms
- React
- Ruby
- Kubernetes
- Docker

Process models

- Agile Development
- Pair Programming