

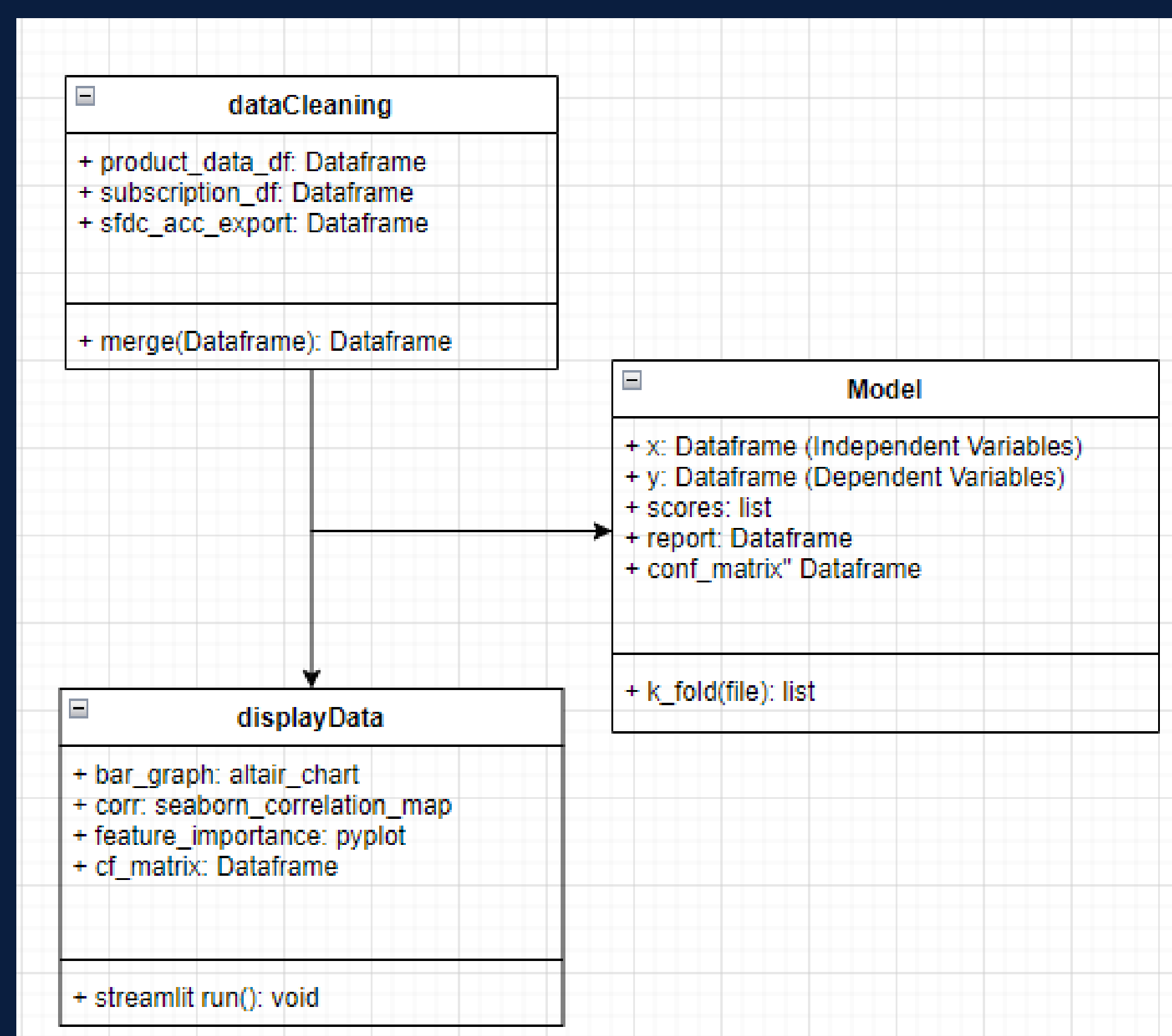
PROBLEM

The goal of this project was to create a machine learning predictive model that would be able to classify whether a customer would renew a subscription as well as identify likely factors that contribute to customer churn. This would allow our sponsor (Kaseya) to quickly identify and remediate possible clients at risk of suspending a membership.

CURRENT SYSTEM

To predict customer churn, we cleaned our given data, performed SMOTE oversampling to balance the data, and implemented Stratified K-Fold Cross Validation with Logistic Regression in order to have a consistent and accurate model to identify churn factors. We used Streamlit to visualize our results in a sleek User Interface.

OBJECT DESIGN/CLASS DIAGRAM



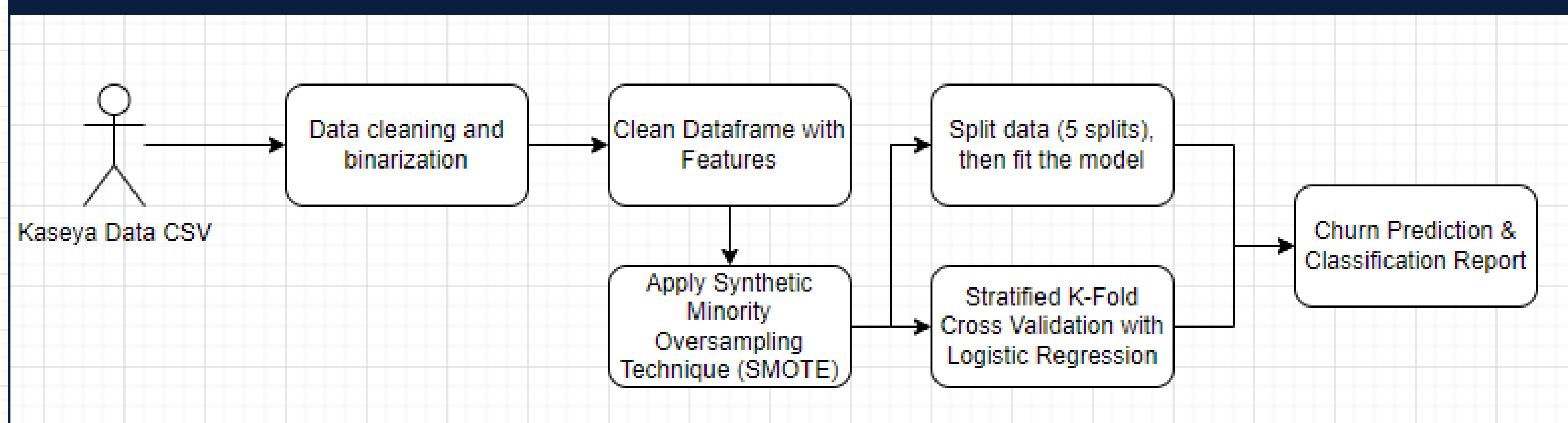
VERIFICATION

Initially, I tested the model accuracy using only Logistic Regression. I soon realized that the data that was provided to us was very unbalanced. As a team, we decided to use SMOTE to oversample our data, which produced better results. To make results consistent, I applied K-fold validation in order to average out the predictive accuracy of our model.

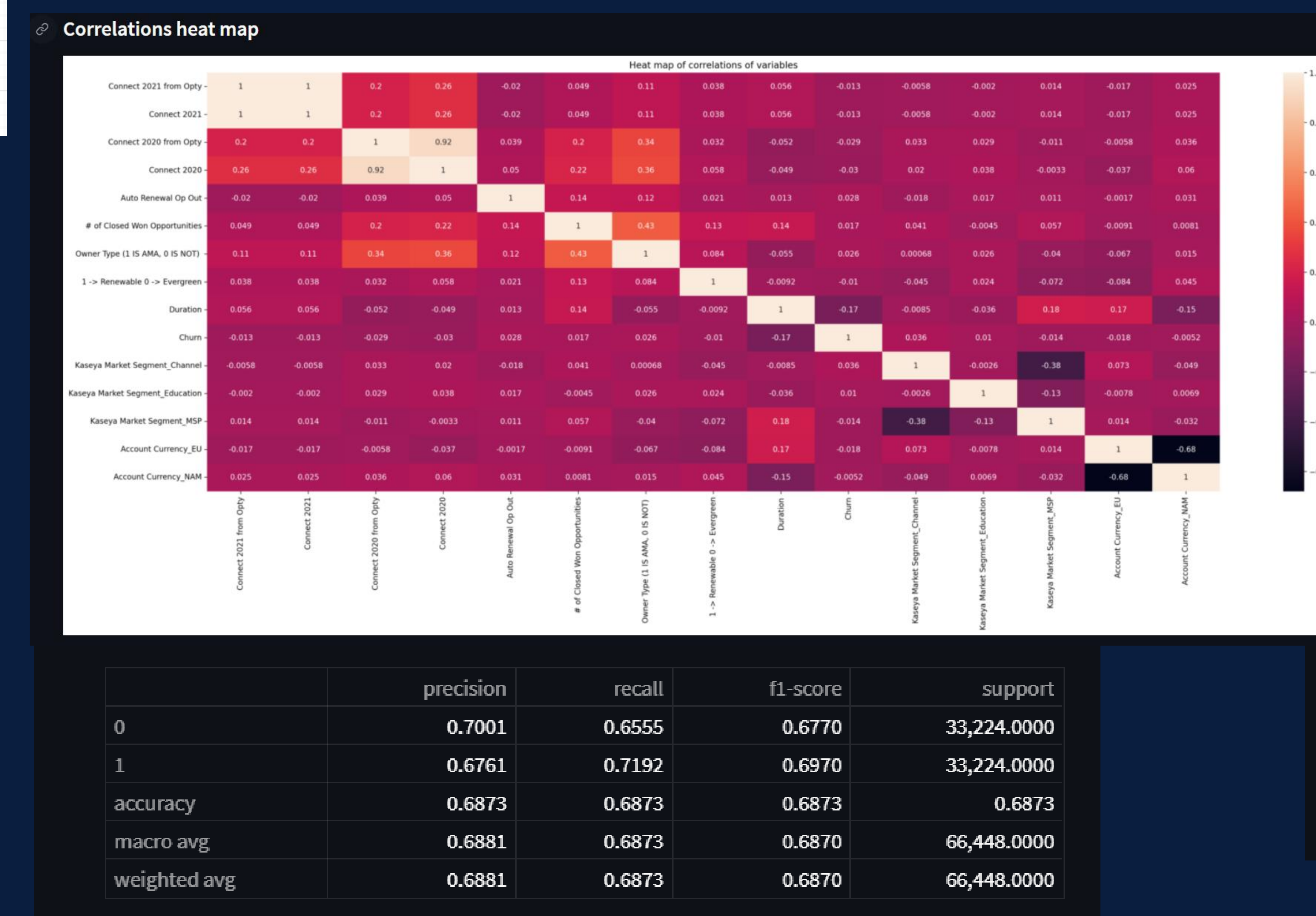
We achieved ~68% predictive accuracy, with duration, won opportunities, and whether a client was Renewable or One-Time purchase being the most likely contributing factors to customer churn.

We could likely have achieved better results with a more balanced dataset, as our churn to not-churn ratio was 1:10, balancing to 1:1 after SMOTE.

MODEL DESIGN AND IMPLEMENTATION



SCREENSHOTS



REQUIREMENTS



- Python 3.8.10
- Visual Studio Code
- Streamlit
- GitHub
- Internet Browser
- Trello

SUMMARY

- Cleaned CSV data and stored merged data into a Pandas Dataframe.
- Developed a machine learning predictive model using SMOTE and Stratified K-fold Cross Validation with Logistic Regression
- Fined tuned parameters to increase model accuracy and precision.
- Assisted in the creation of Streamlit UI.
- Ensured team cooperation and handled pull requests on GitHub.

Confusion Matrix

