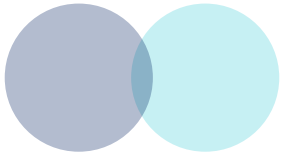
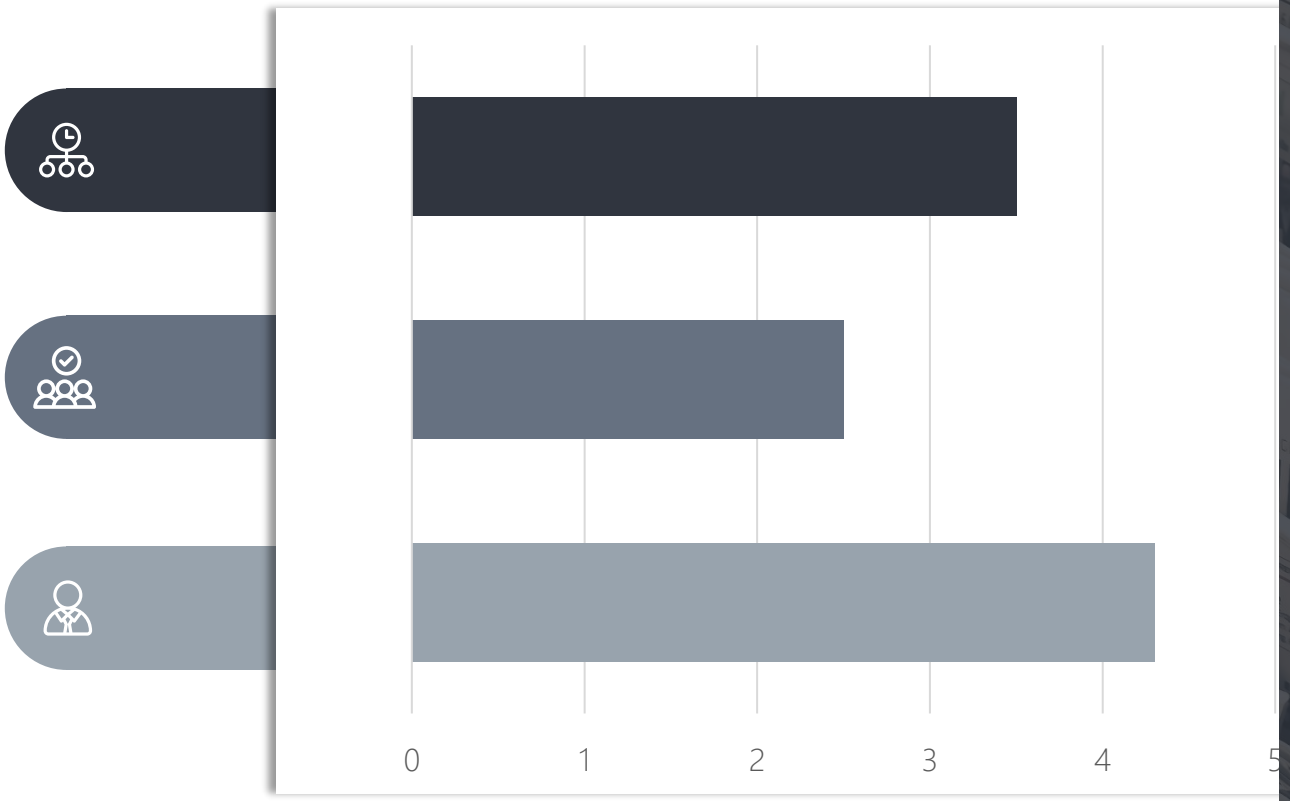


IndabaX Rwanda 2024 Hackathon:
Identify illegal cryptocurrency mining using website activity



- The objective of the challenge is to classify network activity from various websites as either crypto jacking or not, based on features related to both network-based and host-based data.
- The error metric for the competition is the F1 score, which ranges from 0 (total failure) to 1 (perfect score).

Your logo

Methodology

01

Data Loading and pre-processing

Loaded the dataset (train and test) and pre-process to clean the data

02

Exploratory Data Analysis

- Null and duplicated records confirmation
- Statistical summary
- Data distribution plot – KDE Plot in relation to the target variable
- Correlation matrix
- Target variable: record composition
- Initialized SMOTE – Generate synthetic data

03

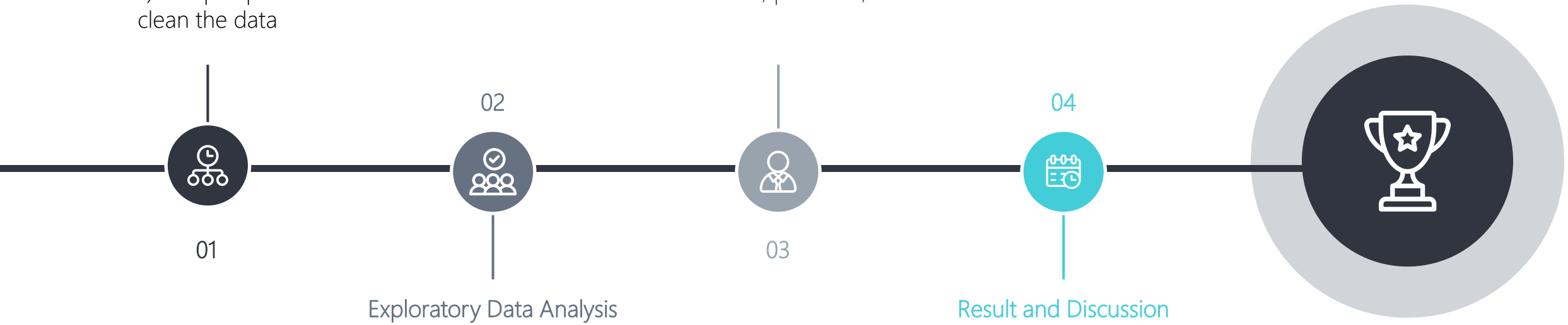
Model Building and Evaluation

Initialized XGB Classifier
Calculate F1 score, precision, and recall

04

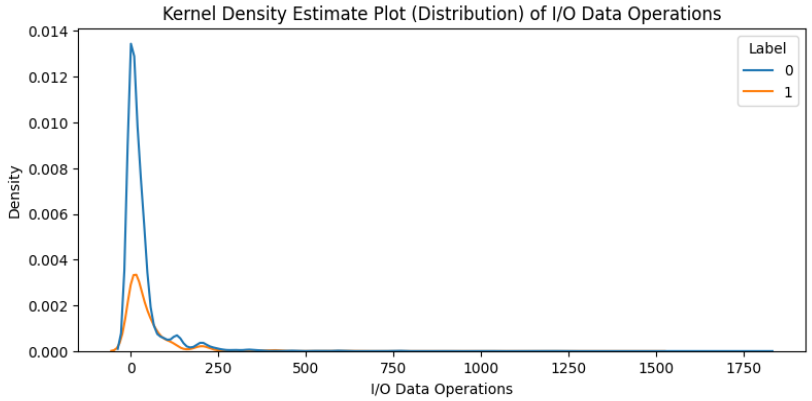
Result and Discussion

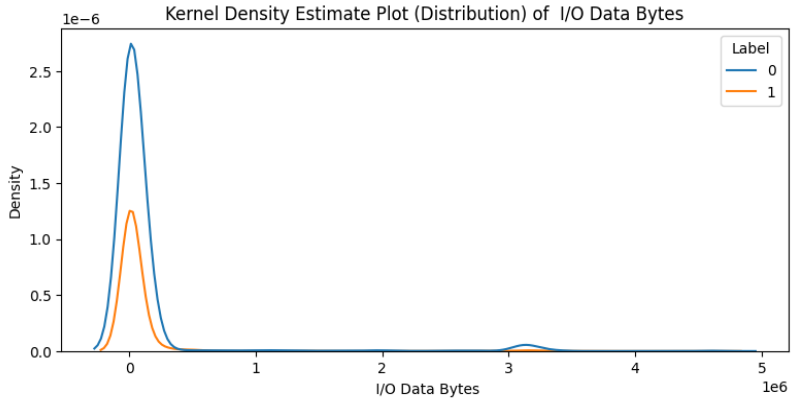
Result visualization

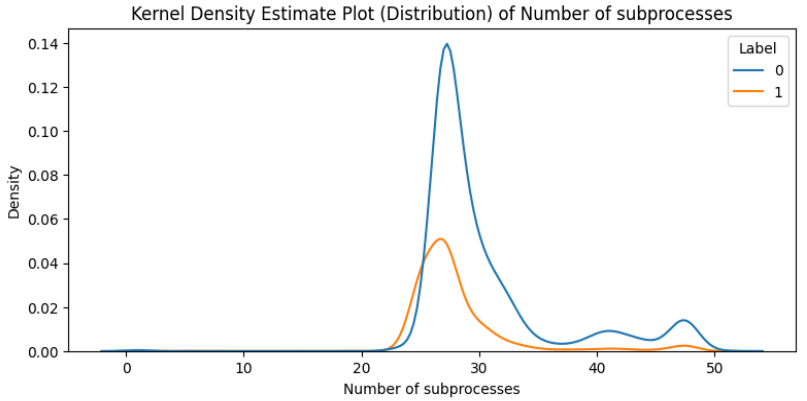


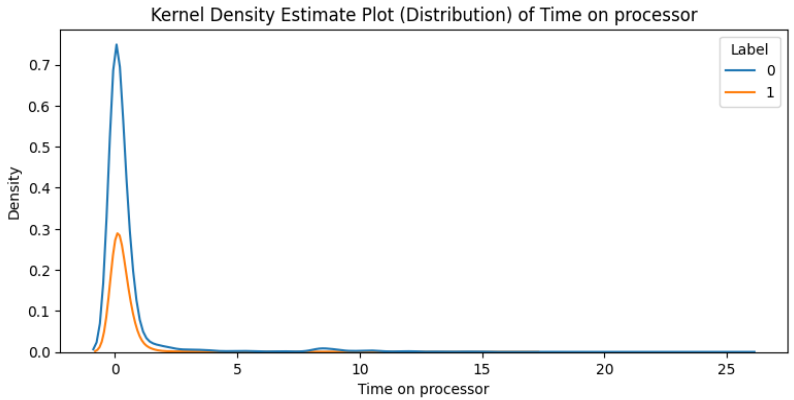
Your logo

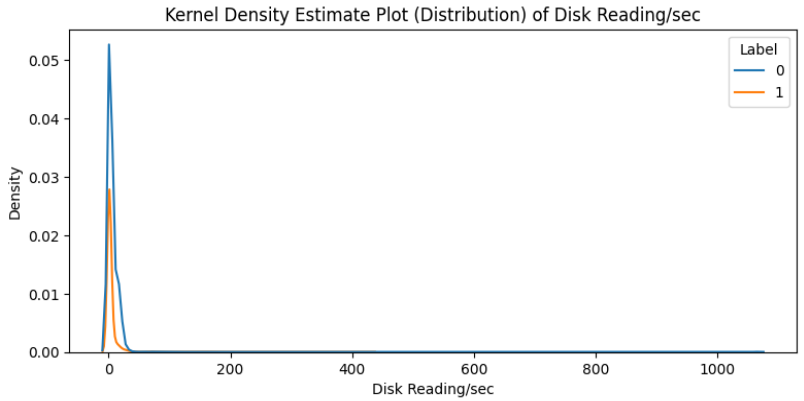
Exploratory Data Analysis

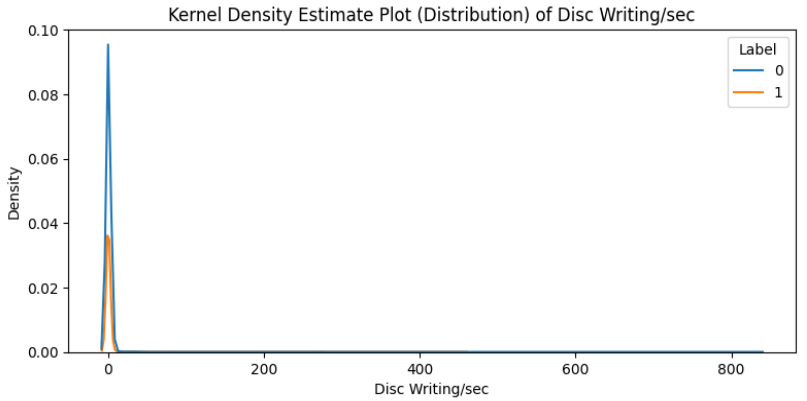


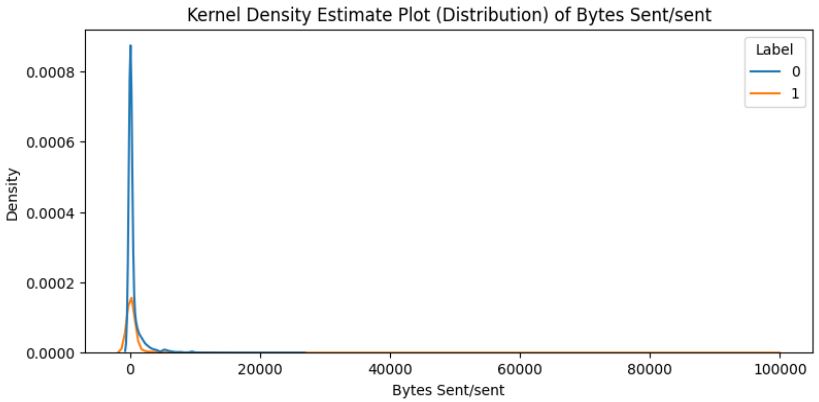


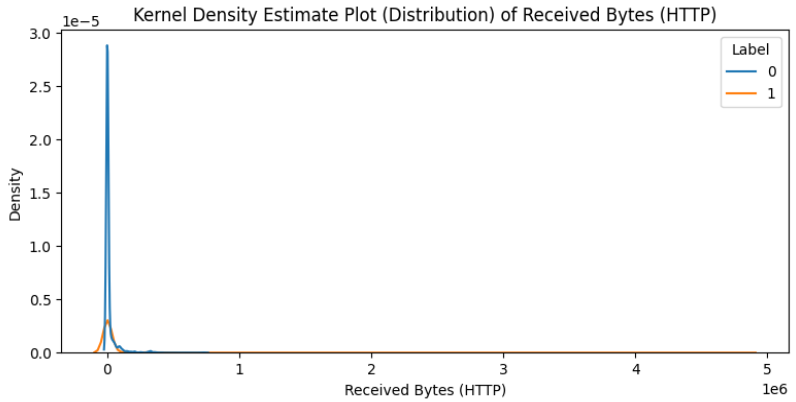


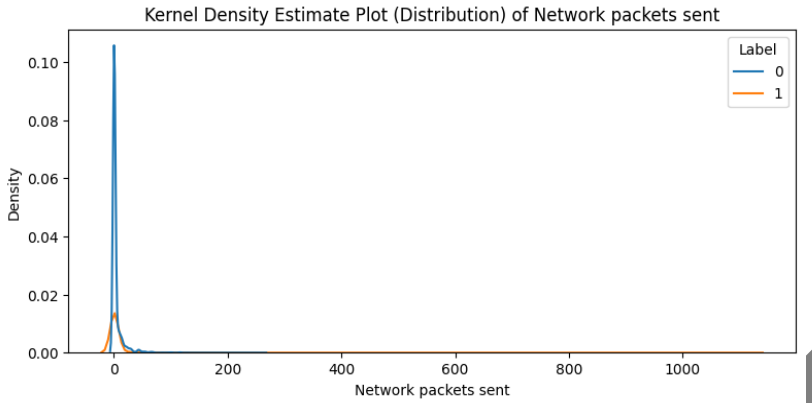




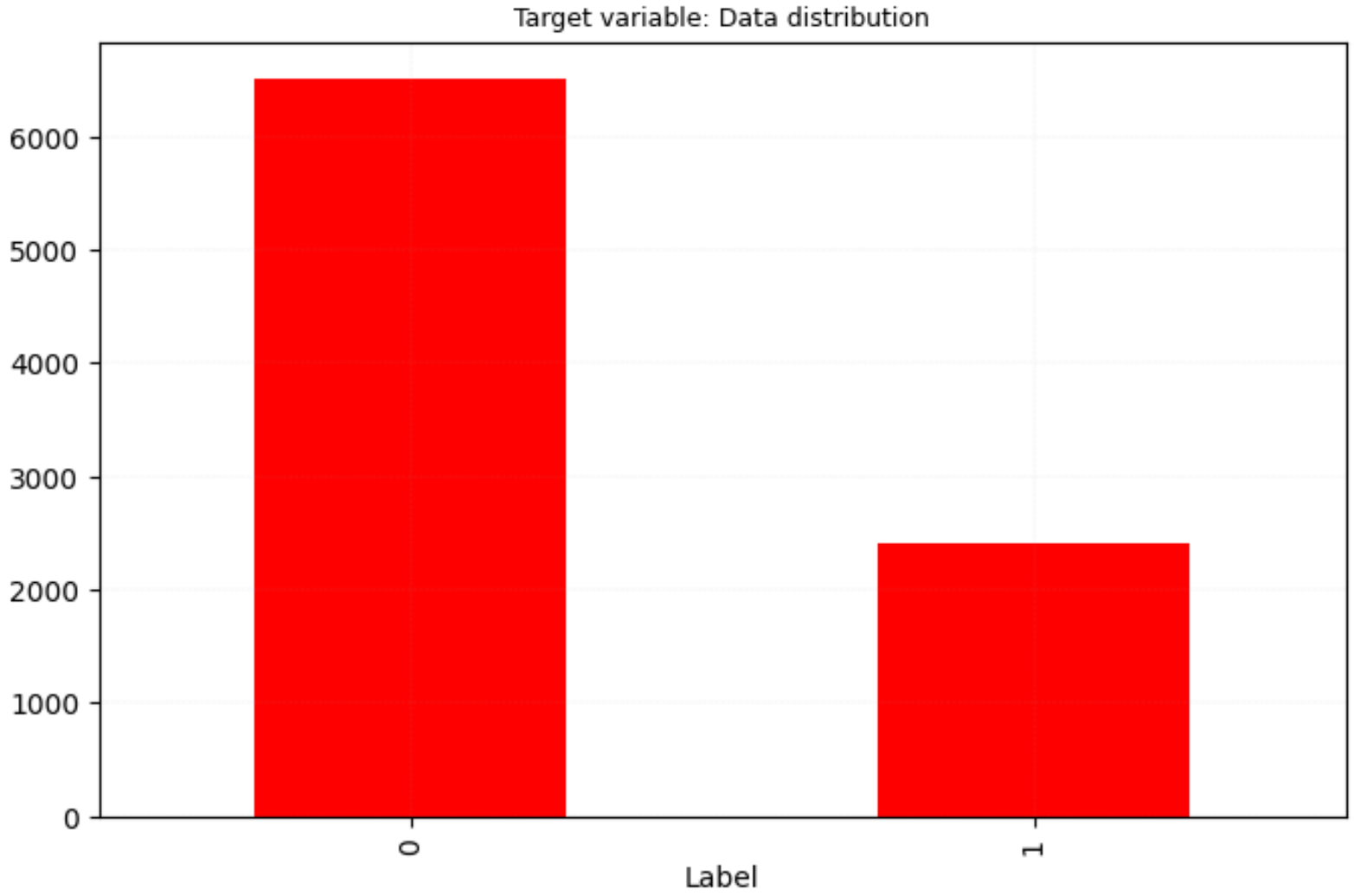








Exploratory Data Analysis



Label 1 was undersampled and SMOTE was applied.

Model Building

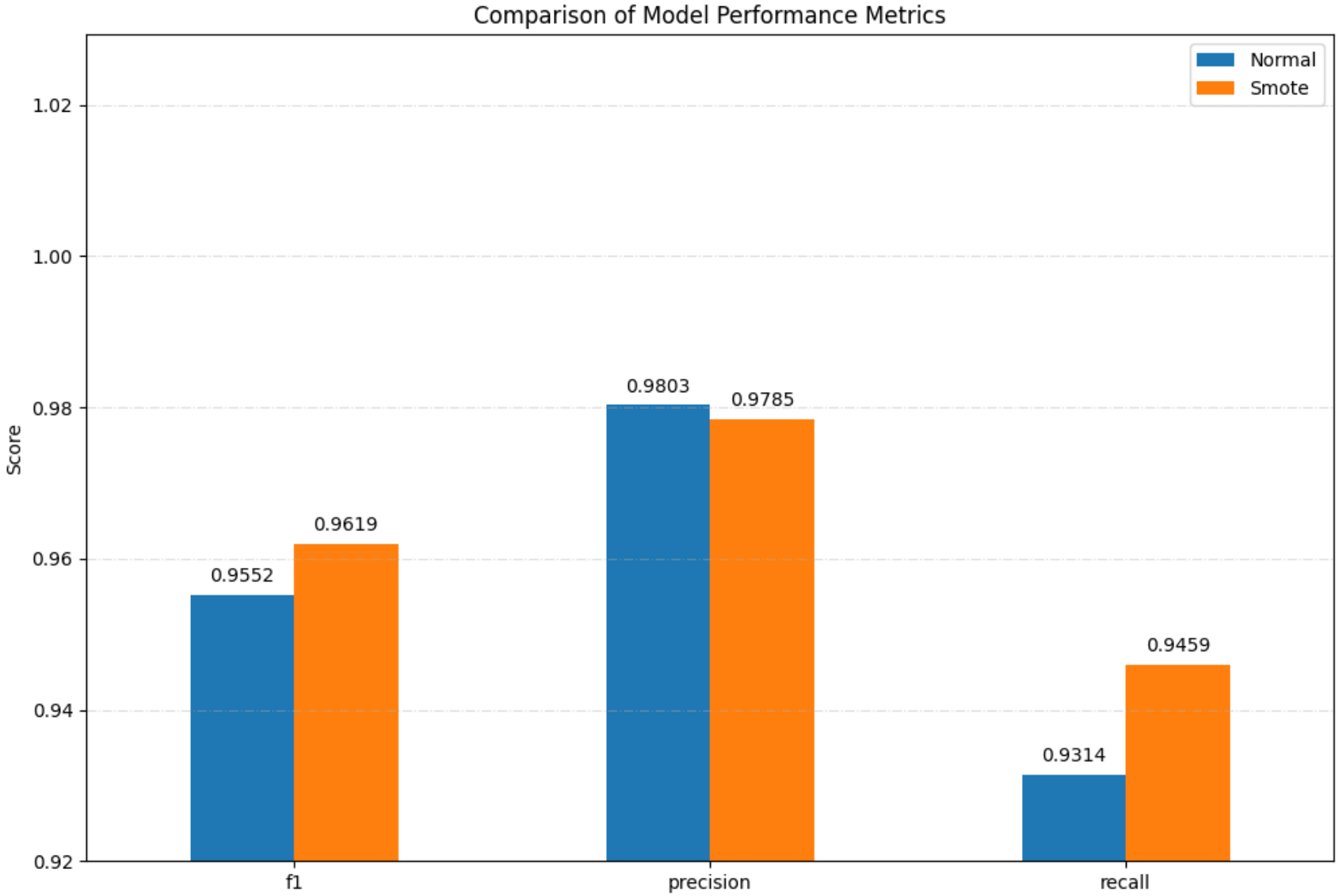
```
smote_xgb_clf = XGBClassifier(
    objective='binary:logistic',
    eval_metric='logloss',
    max_depth=10,
    learning_rate=0.1,
    n_estimators=1000,
    subsample=0.8,
    colsample_bytree=0.8,
    reg_alpha=0.006
)

xgb_clf = XGBClassifier(
    objective='binary:logistic',
    eval_metric='logloss',
    max_depth=10,
    learning_rate=0.1,
    n_estimators=1000,
    subsample=0.8,
    colsample_bytree=0.8,
    reg_alpha=0.006
)

smote_xgb_clf.fit(X_train_resampled, y_train_resampled, eval_set=[(X_val, y_val)], verbose=250)
xgb_clf.fit(X_train, y_train, eval_set=[(X_val, y_val)], verbose=250)
```

Train-test split:
80-20

Result and Discussion



Source Code:

https://github.com/DAMILARE1012/hackathon-Illegal-cryptocurrency-mining-using-website-activity.git


THANK YOU