Team Name: That IT Guy

College Name: RV College of Engg.

Problem Definition: Bank Accounts Analysis

Team Members:

ATUL SAI S S

SHREYAS K G

UPENDRA SHETTY D R

BRIEF INTRODUCTION

- The true extent of money laundering transactions is unknown and uncertain, potentially because financial firms lack incentive and tools to estimate the extent of money laundering in their accounts.
- It was estimated that about 0.05-0.1 percent of the transactions through the Society for Worldwide Interbank Financial Telecommunications system involved money laundering.
- There are several categories of money laundering (ML), including the use of property,gambling, and businesses to obfuscate the true source of funds.

OPPORTUNITY

- Novelty:

  1. Finding the regular patterns from the fraudulent transactions.
  2. Interfacing other Machine Learning technologies like fraudulent Credit card transactions, Malicious URL detections used for the transactions and Secret sharing.
  3. Implementing network security.

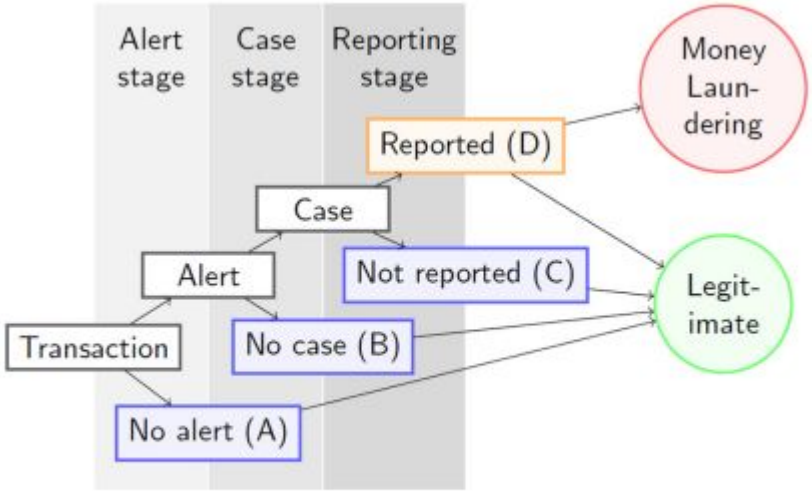
- How it helps Karnataka Police to solve Money laundering?

  1. Suspicious users can be traced from obtained ML models.
  2. Enhancing the network security.
  3. Keeping an eye on the suspicious cases.

FEATURES OF THE PROPOSED MODEL

- Classification of the suspicious money laundering cases.
- Interfacing various models i.e., Pattern detection, URL detection, Credit Card Frauds, Fraudulent UPI transactions.
- Network security
- IP address tracking
- Cryptanalysis of the fraudulent transactions.

Typical process of monitoring,investigating and reporting suspicious transactions in a bank.



BUSINESSES THAT CAN BE USED FOR MONEY LAUNDERING

- HOTELS/RESTAURANTS
- CASINOS
- MARKETING
- NIGHT CLUBS
- HARD CASH/JEWELLERY

TECHNOLOGY USED TO PREVENT MONEY LAUNDERING

- Automated transaction monitoring systems(Using ML,DL and AI)
- KYC (Know Your Customer) and AML (Anti-Money Laundering) software
- Biometric technology
- Blockchain technology(Using Cryptography)
- Risk assessment tools(Data visualization by R programming)
- Customer relationship management (CRM) systems(Using KYC linked data)

Our proposed model includes all these features.

PROGRAMMING LANGUAGES USED

1. Python: Python is a popular programming language used in the development of anti-money laundering (AML) software. It is known for its simplicity, flexibility, and powerful data manipulation capabilities, which are essential for analyzing and detecting suspicious financial transactions.
2. R: R is a programming language that is widely used in the field of data analysis and statistics. It is often used in AML software to analyze large amounts of financial data and identify patterns and trends that may indicate money laundering.
3. Java: Java is a widely used programming language that is known for its robustness, portability, and scalability. It is commonly used in AML software to develop complex algorithms for detecting suspicious financial transactions.

PROGRAMMING LANGUAGES USED

4. C++: C++ is a powerful programming language that is often used in AML software to develop high-performance algorithms for detecting money laundering. It is known for its speed and efficiency, making it well-suited for large-scale financial data analysis.

5. SQL: SQL is a programming language used to manage and manipulate relational databases. It is often used in AML software to store and retrieve financial transaction data for analysis and detection of money laundering.

6. SAS: SAS is a powerful data analysis software that is commonly used in the financial industry. It is often used in AML software to detect and prevent money laundering through the use of advanced analytics and data visualization tools.

ESTIMATED COST

- The cost estimated for the proposed model would be in the range of 25,000 to 50,000 for implementing in real senses.
- More than the cost most concerning thing for the prediction is the DATA.
- The real-time data is very much helpful to understand the efficiency of the model.

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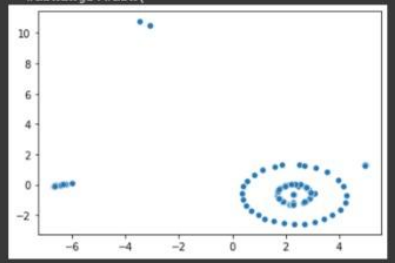
KSP OUTLIER DETECTIONCTSNE.ipynb

```
model4 = TSNE(learning_rate=200)
tsne_features = model4.fit_transform(data_frame3)
xs4 = tsne_features[:,0]
ys4 = tsne_features[:,1]
sns.scatterplot(xs4,ys4)
plt.show()
```

```
0        0.0
1        0.0
2      349.0
3        0.0
4        0.0
       ...
172      0.0
173      0.0
174      0.0
175      0.0
176      0.0
Name: Balance, Length: 177, dtype: float64
/usr/local/lib/python3.8/dist-packages/sklearn/manifold/_t_sne.py:780: FutureWarning: The default initialization in TSNE will change fr
  warnings.warn(
/usr/local/lib/python3.8/dist-packages/seaborn/_decorators.py:36: FutureWarning: Pass the following variables as keyword args: x, y. Fr
  warnings.warn(
```



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KSP OUTLIER DETECTIONCTSNE.ipynb

```
plt.show()
```

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/usr/local/lib/python3.8/dist-packages/seaborn/_decorators.py:36: FutureWarning: Pass the following variables as keyword args: x, y. Fr
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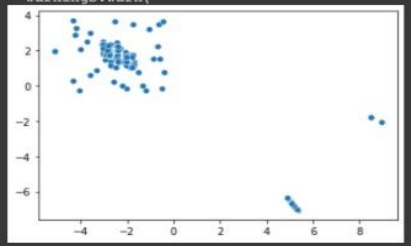
```



```
[49] data_frame['Balance'] = data_frame['Balance'].apply(pd.to_numeric, errors='coerce', downcast='float')
     data_frame3 = data_frame.replace(np.nan, 0, regex=True)
     print(data_frame1['Balance'])
     model4 = TSNE(learning_rate=200)
     tsne_features = model4.fit_transform(data_frame3)
     xs4 = tsne_features[:,0]
     ys4 = tsne_features[:,1]
     sns.scatterplot(xs4,ys4)
     plt.show()
```

```
0        0.0
1        0.0
2      349.0
3        0.0
4        0.0
       ...
172      0.0
173      0.0
```

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POLICE HACKATHON 2023-RESULTS

KSP OUTLIER DETECTIONCTSNE.ipynb

```
data_frame['Credit'] = data_frame['Credit'].apply(pd.to_numeric, errors='coerce', downcast='float')
data_frame1 = data_frame.replace(np.nan, 0, regex=True)
print(data_frame1['Credit'])
tsne_features = model1.fit_transform(data_frame1)
xs3 = tsne_features[:,0]
ys3 = tsne_features[:,1]
sns.scatterplot(xs3,ys3)
plt.show()
```

```
0        0.0
1        0.0
2        0.0
3        0.0
4      100.0
       ...
172      0.0
173      0.0
174      0.0
175      0.0
176      0.0
Name: Credit, Length: 177, dtype: float64
/usr/local/lib/python3.8/dist-packages/sklearn/manifold/_t_sne.py:780: FutureWarning: The default initialization in TSNE will change fr
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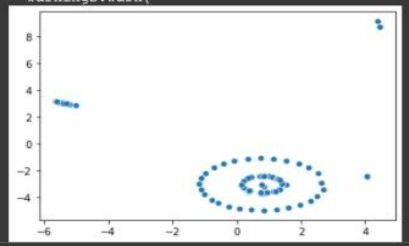
```



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Cleaned_Vijaya Bank.csv

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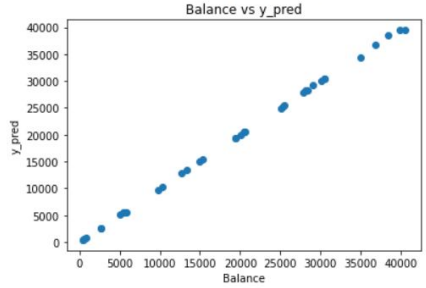


```
[3] accuracy = regressor.score(X_test, y_test)
    print("accuracy=")
    print(accuracy)

    accuracy=
    0.9996712011723077
```

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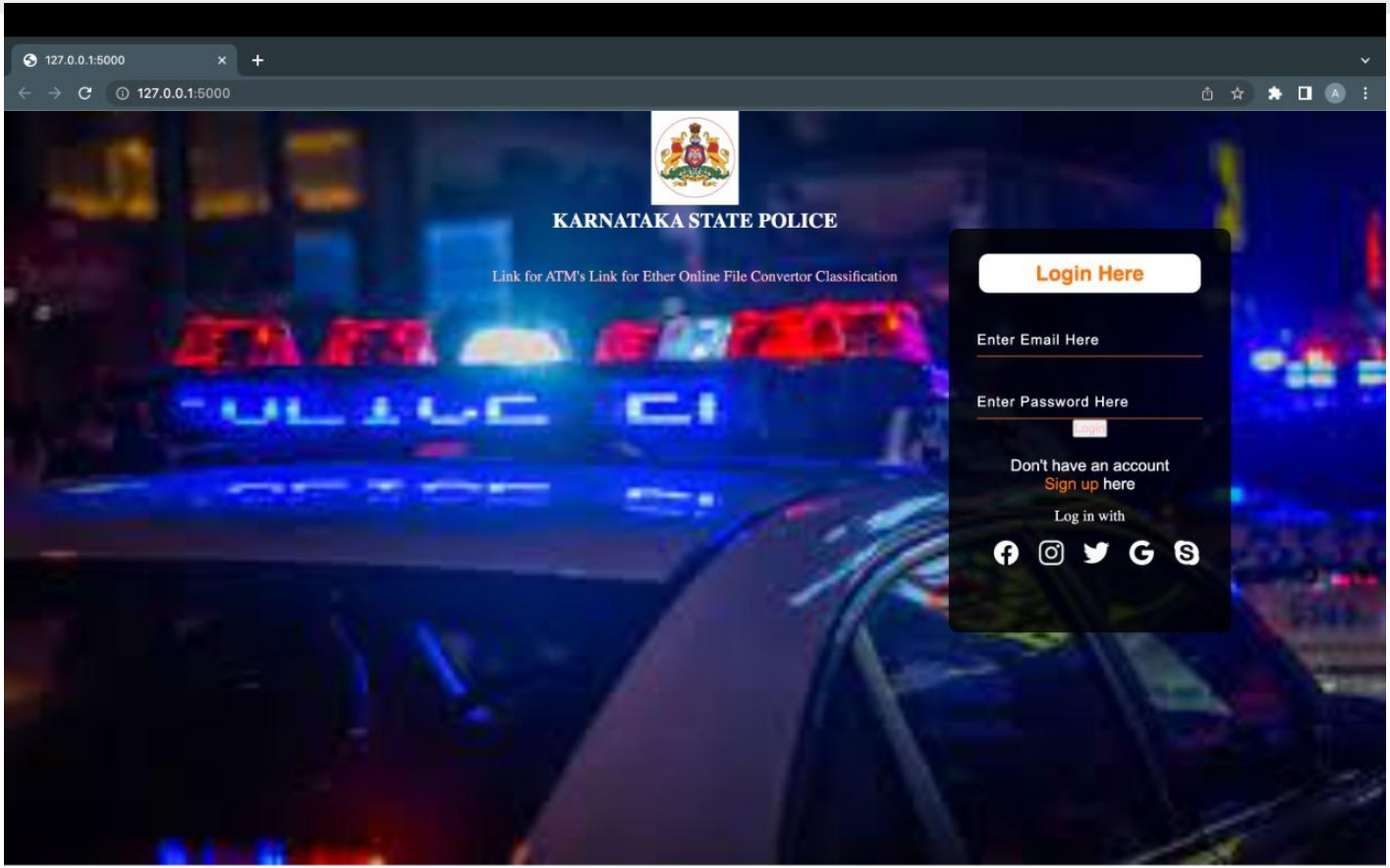

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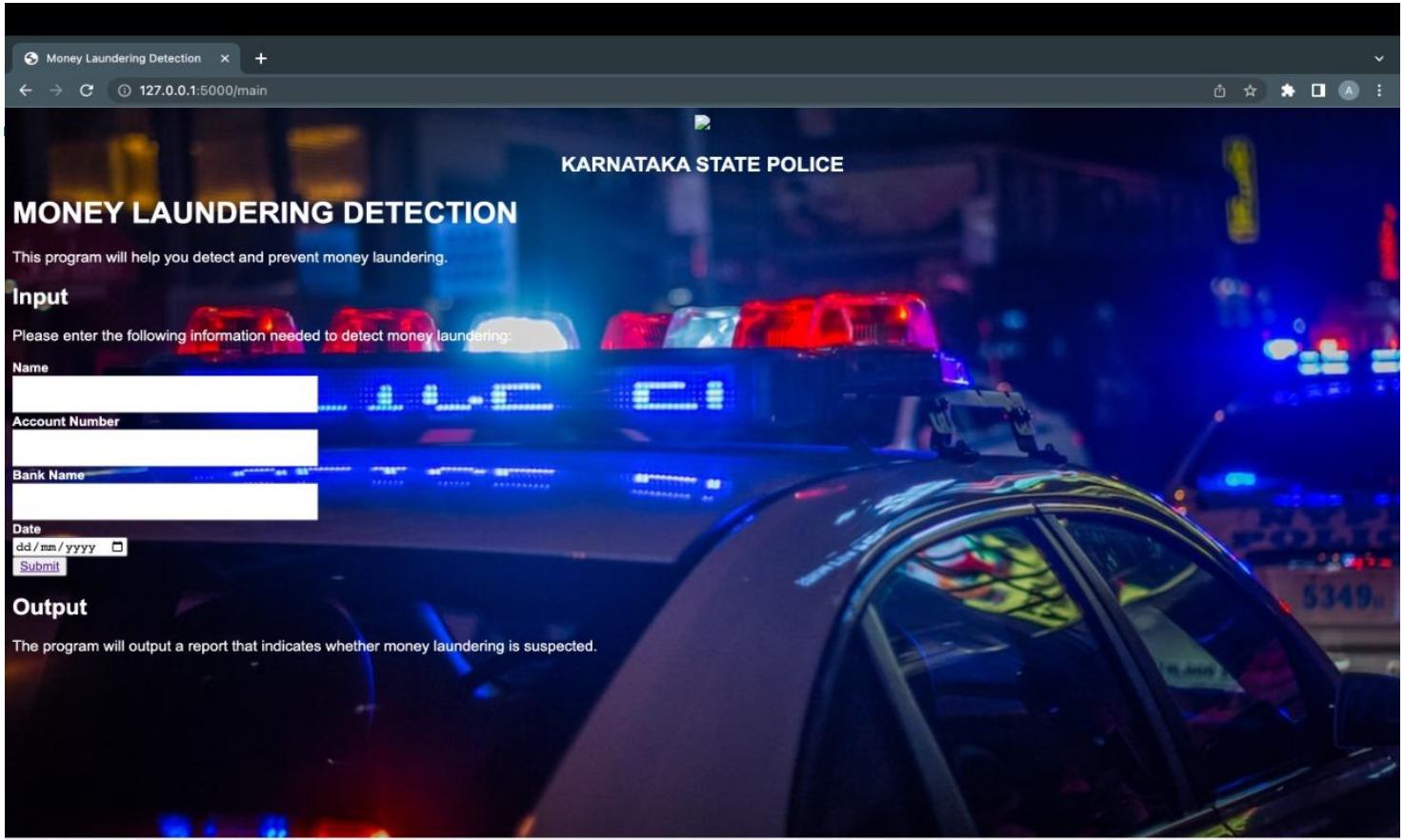

THANK YOU