PayNet
PAYMENTS NETWORK MALAYSIA

Fraud Detection

Account and Transactional Risk Scoring

24th July 2024

What’s the problem?

What's the problem?

The ever-increasing number of fraud cases

Macau Scam

Utusan Malaysia

Penjawat awam rugi RM677,565 ditipu 'phone scam'

KEPALA BATAS: Seorang penjawat awam berusia 40-an di sini kerugian sebanyak RM677,565 selepas dipercayai terpedaya sindiket 'phone scam'...

5 hours ago

FMT

Woman loses RM1.18mil EPF and bank savings to Macau scam

PETALING JAYA: A 55-year-old woman has suffered losses amounting to RM1.18 million after falling victim to the "Macau Scam " recently,...

1 month ago

Job Scam

The Sun Daily

Malaysian woman scammed by fake emplo work

SCAMMERS are pretending to be employers offering online v individuals with the promise of easy tasks in exchange for...

18 Apr 2023

Malay Mail

Tinder match leads Kuching man to lose R

Investment Scam

Malay Mail

Penang woman loses over RM500,000 to investment scam

KEPALA B investmen

5 days ag

The St

Over 3 reports lodged against firm

KUALA LUMPUR: An alleged bogus investment firm has left hundreds brok victims are now urging prompt actions to be taken. The Malaysian...

4 Mar 2023

New Straits Tim

150 people l

KUALA LUMPUR tactics used by a

11 Mar 2023

Love Scam

Free Malaysia Today

Factory supervisor loses RM164,000 in online scam

KUANTAN: A factory supervisor lost RM164,601 in an online scam after befriending a woman via Facebook two years ago.

25 Mar 2023

Loan Scam

Malay Mail

Accountant in Sibu loses over RM48,000 for RM20,000 loan in online scam

SIBU, March 30 — An accountant who wanted to get a RM20,000 loan ended up losing RM48,560 after being duped by an individual of a...

30 Mar 2023

E-commerce Scam

New Straits Times

Student loses RM26,200 to e-comm

KOTA BARU: A 17-year-old student fell prey to an RM26,000 over the purchase of a handphone early

12 Dec 2021

FMT

Nursery operator loses over RM1m

The victim became suspicious and realised that sh asked to make an additional payment to receive h

1 month ago

Malware/ APK/ Takeover Scam

AsiaOne

Thorny situation: Woman buys durians online, loses $50k lif savings after downloading third-party app

It's hard to resist a good deal, especially when it comes to durians. And for one woma her love for the king of fruits cost her quite...

10 May 2023

Free Malaysia Today

Woman 'cleaned out' of cleaning app

MELAKA: A woman lost RM4,700 from her bank account when her money disappeared after downloading an "android package kit" (APK) file to place...

18 Jul 2022

Storekeeper

scam advertised

5 days ago

New Straits Times

by scammer

1 month ago

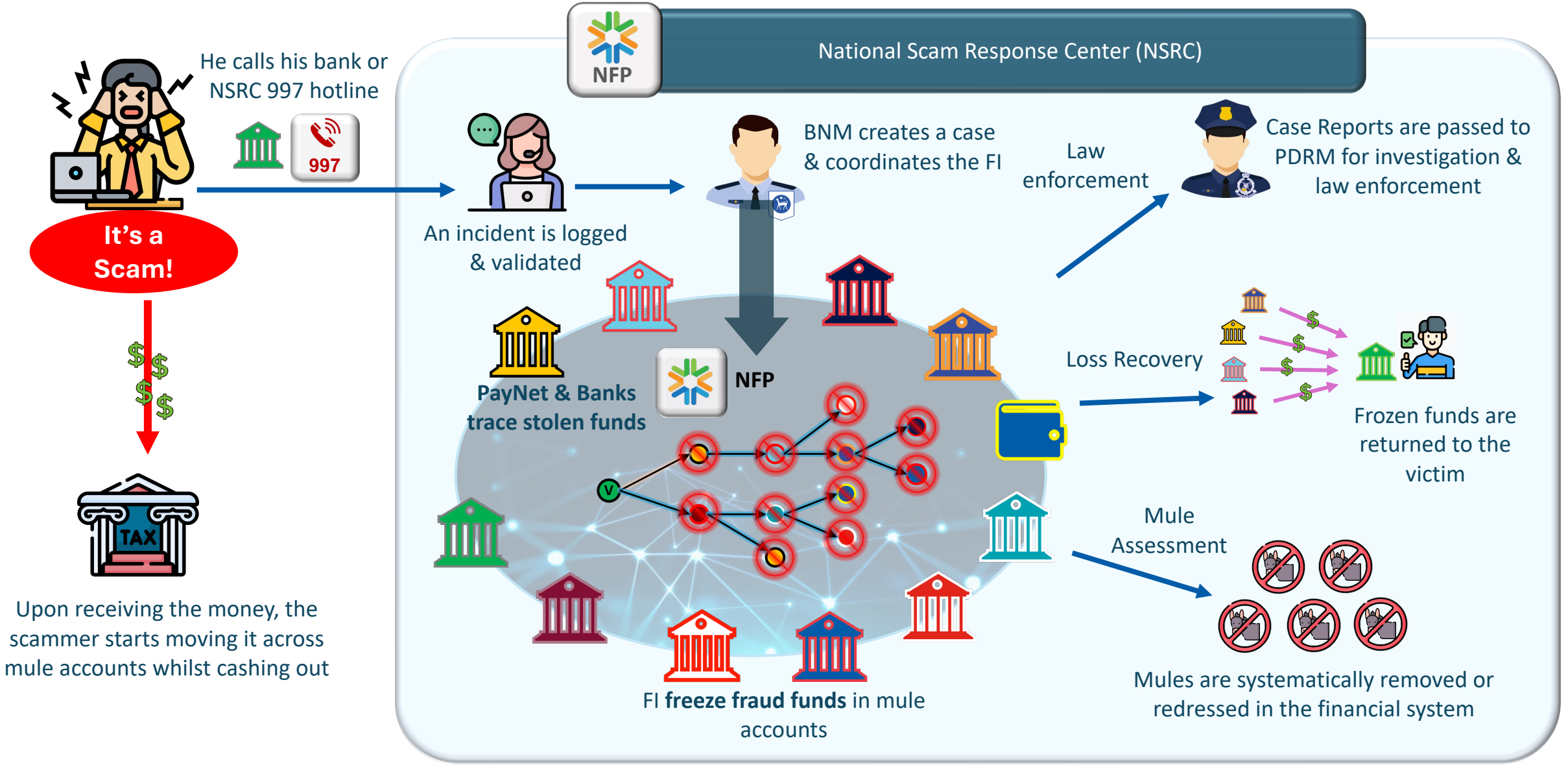
3 Aug 2022

25,480 cases of Online Scams were reported with an approximate **loss of RM 851 Million** in 2022

“997. What’s your emergency?”

"997. What's your emergency?"

National Scam Response Center (NSRC)



Fraud Prevention

better than cure


EMERGENCY
MEETING

Fraud Prevention

Challenges

Data

Data Volume
- >10 million transactions in a day
- And this is only for 2 products…

Data Cleanliness
- Missing values
- Inconsistent formats
- Reliability of information

Exploratory Data Analysis
- Basic statistics
- Distributions
- Visualize data

Labels

Extreme Imbalance
- 1000 non-fraud : 1 fraud
- Resampling / Synthetic Data / Hybrid
- Class Weights

Labels Misclassification
- K-Nearest Neighbor

Defining Fraudulent Transaction
- If an account is tagged as a mule, should all transactions by this account be considered fraudulent?
- Or, only transactions after the account is identified as a mule?
- **What's the difference?**

Ambiguity

Inconsistent Patterns
- Fraud patterns are quite inconsistent
- Police/Bank Officers themselves have a hard time identifying fraud transactions

Various types of fraud
- Different behaviors and patterns, for different fraud types
- How does the victim of a love scam behave prior to the scam?
- How does the feature importance differ from one type to another?

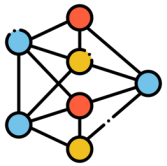
and many many more…

Fraud Prevention

Model Flow

1. Feature Engineering

Arguably the most important step in machine learning!



Graph Features
- Eigenvector Centralities

Behavioral Features
- Test transaction

Interaction Features
- Features A * Features B

2. Preprocessing

Dimensionality Reduction
- e.g. Principal Component Analysis

Scaling
- Standardization/Normalization

3. Feature Selection

Correlation Analysis
- How does your feature affect your labels

Domain Expertise
- Selecting features based on experience

AI Bias

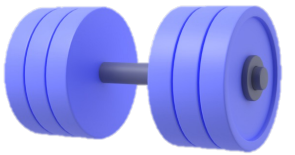
4. Model

XGBoost
- High Performance
- Feature Importance
- Struggle with large datasets
- Hyperparameters tuning

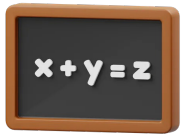
- Complex Patterns
- Feature Learning
- Black Box
- Very data hungry!

Random Forest
- Relatively little tuning required
- Imbalanced data
- Heavy (Size and Compute)

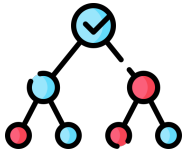
Isolation Forest
- Unsupervised Learning
- Good explainability!
- Limited to Anomaly Detection



5. Training

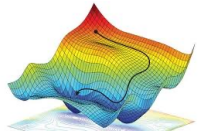


The slight changes to the weights and biases of a formula



Addition of trees based on optimal split point

Cost Function (except Iso. F.)



Optimization Function (except Iso. F.)

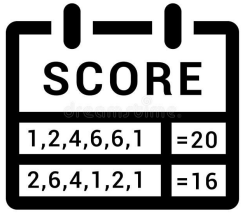
Explainability

Explainability

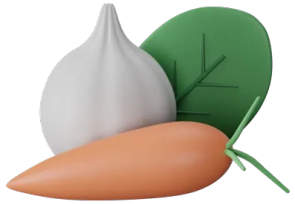
Art of Selling

LIME - Local Interpretable Model-Agnostic Explanations

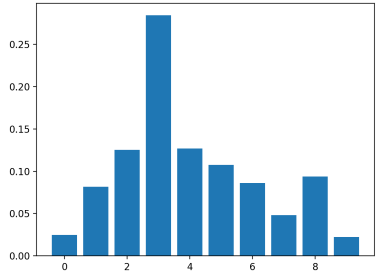
Prediction



Features



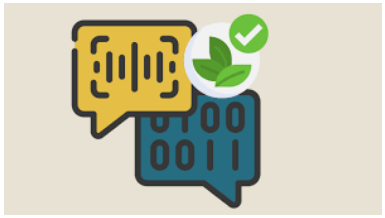
Feature Importance



SHAP - SHapley Additive exPlanations

Convinced Officer

Explanations



Large Language Model

Thanks for listening!