

# Fraud Detection Project

for Xente Tech Ltd. in The Innovation Village, Uganda

---

05. January 2023  
Paul, Tobi and Reebal

# Table of content

1. Who is Xente?
2. Our Mission
3. Data Work & Baseline Model
4. Machine learning work easy explained
5. Outline findings
6. Recommendation and future work

# Who is Xente?

Xente is a **Financial Technology** company based in Uganda

Focus on:

- small payments (team members, airtime, utilities)
- finance automation for companies
- expense management (documentation for accounting)
- (corporate) Visa cards
- mobile money, bank transfers, credit



# Why Xente?

- Xente makes African businesses efficient, empowers them to grow and connects them to the global economy
- Fraud detection is a relevant subject to every business in the world
- Fraud detection could also be a service of Xente



# Our Mission

## **Build a model that can detect frauds**

- Data work
- Baseline modell
- Predictive Modeling
- Visualization



# Data work

Features: 19

Transactions: 95.662

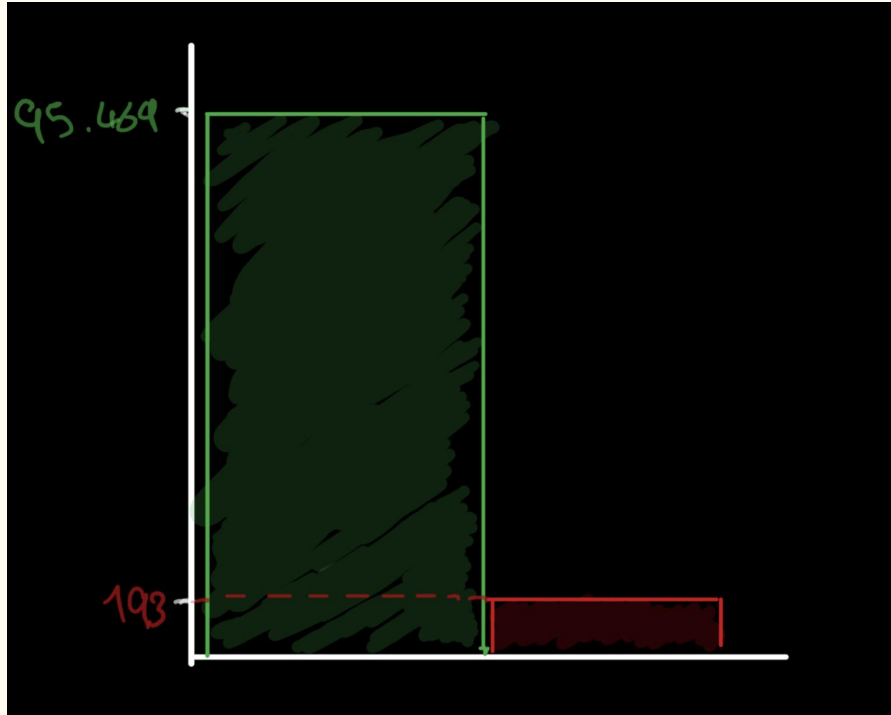
Data cleaning

Data exploration

Feature engineering



# Fraud Cases



0.2% Frauds

X: Frauds, Non-frauds

y: Number of cases

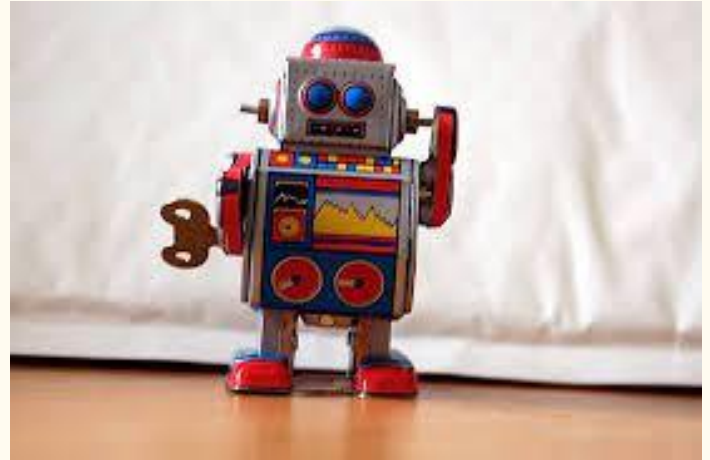
Non-frauds

Frauds

# Baseline Modell

Transactions with an value equal or exceeding 500.000 are frauds.

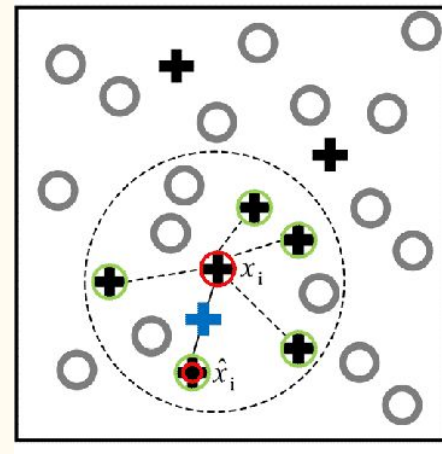
f1-score = 0.78





# Machine learning

- The problem: imbalance
- The solution: Synthetic Minority Oversampling Technique
- The model: Building three different models
- Tuning: From good to great through hyperparameter tuning



creating synthetic frauds using SMOTE

# Results

Unoptimized model:

F1-score 0.79

Optimized model:

F1-score 0.88

Most important features:

transactions in financial services (products and providers) are most likely to be fraudulent

# Recommendation & future work

Improve model:

- collect more data and improve model
- cost of missed frauds vs. wrongly predicted frauds
- error analysis

Further preventive measures:

- two factor authentication

Thank You

Questions?