BIN381 Project

Group F

Business Understanding

2 — 3 — 4 — 5 — 6

Problem

The model LangaSat currently uses is based on a salary threshold of R50 000.

Objectives & Goals

- Create a classification model
- Do not solely consider Annual Salary for model creation
- Accurately identifies the eligibility of customers
- Increase the accuracy of decisions
- Reduce false positives and false negatives
- Increase the number of eligible customers
- Find important indicators of eligibility
- Visualisations
- Accuracy over 85%

Business Understanding — 2 — 3 — 4 — 5 — 6

Risks

Data Quality
Overfitting
Biased Data
Data Privacy
Missing Deadlines

Assumptions

Complete Data
Necassary Data
Data Cleaning will be sufficient
Relevant Data
Free of Bias
R and Power BI
Currently Annual Salary Threshold

Constraints

CRISP-DM
Quality of dataset
Size of the dataset
Development Team
Time Frame
Ethical Guidance

1 — Data Understanding — 3 — 4 — 5 — 6

Data Overview

Relevant Columns: Title, Department Name, Annual Salary, Gross Pay Last Paycheck, Gross Year to Date, Gross Year to Date FRS Contribution, Year of Birth, Marital Status, Country ID, Education, Occupation, Household Size, Years in Recidance and Eligible.

Data Quality

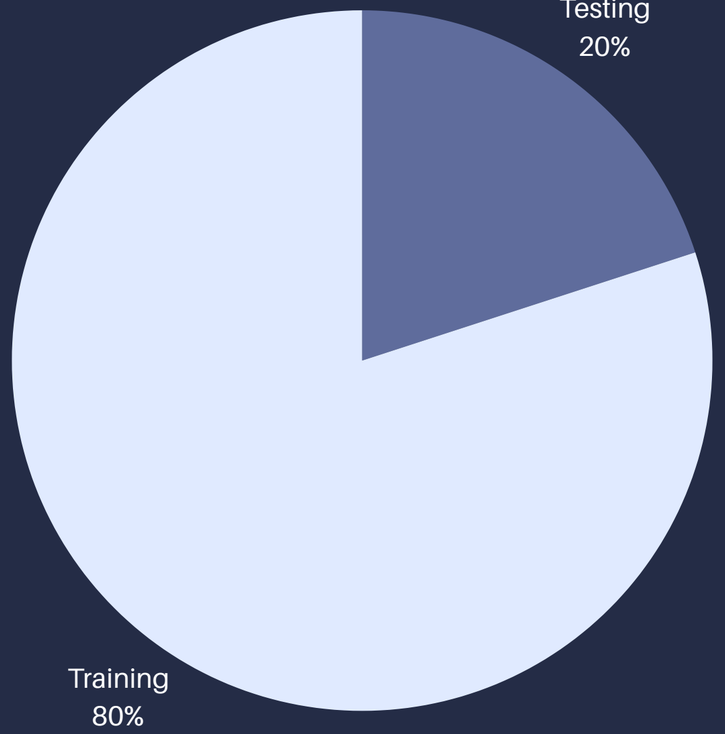
Missing Data
Duplicates
Outliers
Many versions of the same groups
Variable types
Cardinality

1 — 2 — Data Preperation — 4 — 5 — 6

Data Cleaning and Transformation

Feature engineering
Remove irrelevant columns
Recode similar attributes
Fill empty values
Remove empty rows
Outlier Treatment
Frequency Encoding
One-hot encoding

1 — 2 — 3 — Modelling — 5 — 6



Model

Random Forest Model

1 — 2 — 3 — 4 — Evaluation — 6

	Positive	Negative
Positive	12481	368
Negative	1129	24285

Accuracy	96.1%
Precision	97.1%
Recall	91.7%
F1 Score	94.3%

64.4% **Percentage of Eligible Customers** 66.4%

1 — 2 — 3 — 4 — 5 — Deployment

Shiny App

- Load a Record
- Bulk Upload
- View All Records
- Model Metrics
- Group Members

Ethical Considerations

- Data Privacy & Confidentiality
- Data Minimization & Relevance
- Bias & Fairness
- Transparency & Interpretability
- Data Security
- Ethical Use of Predictions

Group Experience

Predictions

Decision Tree

Practical Solutions

Interface

Teamwork

CRISP-DM

Pipeline

Machine Learning

Server

Goals

Logistic Regression

Shiny

Data Preprocessing

Model Outcomes

Random Forest

Real World

Conclusion

Thank You