

Configuration Manual

MSc Research Project
Artificial Intelligence

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Project Submission Sheet
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Configuration Manual

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1 Data Preparation and Loading

This section outlines the initial steps of using Python and Pandas to load and prepare financial transaction data, setting the foundation for subsequent analysis and model training.

Key Steps:

1. Importing necessary libraries (pandas, numpy, tensorflow). *Installation — pandas 2.1.4 documentation* (n.d.)
2. Loading data from "bank.xlsx".
3. Initial exploration using `df.head()` and `unique_values`. *Download Python* (n.d.)

2 Data Visualization

Here this explains how to use matplotlib *Installation — Matplotlib 3.8.2 documentation* (n.d.) for visualizing transaction data, enhancing understanding by creating clear, informative plots that reveal patterns and trends in the financial data.

Key Steps:

1. Creating plots to visualize balance amounts over time.
2. Adjusting figure size, labels, and titles for clarity.

3 Data Preprocessing and LSTM Model Setup

This focuses on readying data for the LSTM model, involving normalization and categorization processes, followed by setting up the model's architecture in TensorFlow *Install TensorFlow 2* (n.d.), including defining layers and parameters to optimize it for analyzing financial transaction patterns effectively.

Key Steps:

1. Normalizing 'BALANCE AMT' using `MinMaxScaler`.
2. Converting 'Account No' to categorical data.
3. Creating sequences for LSTM processing.
4. Defining the LSTM model structure with various layers (Dense, Dropout, Batch-Normalization).

References

Download Python (n.d.).

URL: <https://www.python.org/downloads/>

Installation — Matplotlib 3.8.2 documentation (n.d.).

URL: *<https://matplotlib.org/stable/users/installing/index.html>*

Installation — pandas 2.1.4 documentation (n.d.).

URL: *https://pandas.pydata.org/pandas-docs/stable/getting_started/install.html*

Install TensorFlow 2 (n.d.).

URL: *<https://www.tensorflow.org/install>*