

Cryptocurrencies Forecasting

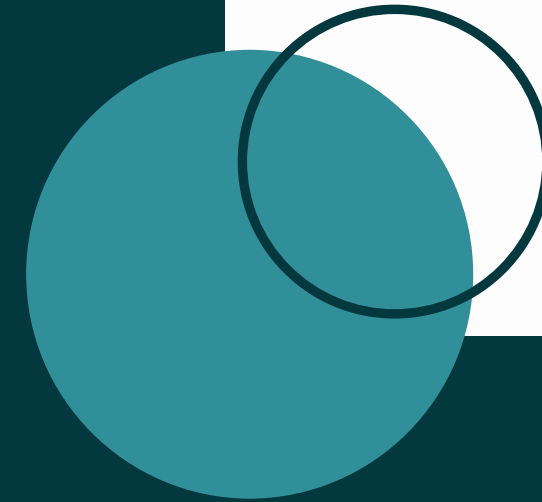
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AGENDA

- 1 Business Understanding
- 2 Data Understanding
- 3 Data Preparation
- 4 Modeling, Evaluation and Predictions
- 5 Business Implications and Future Research

Business Understanding

BUSINESS GOAL

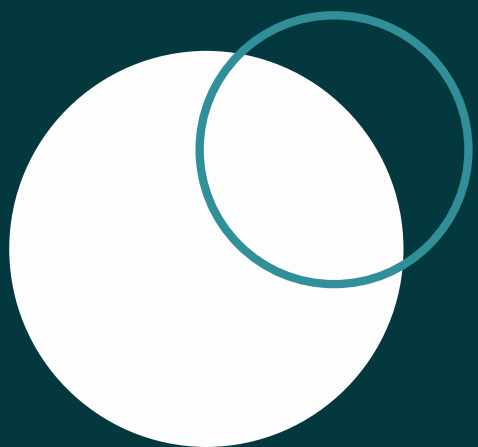
Investments4Some
want to use the
potential of predictive
models, so they could
anticipate the daily
worth of different
cryptocurrencies

DATA MINING GOAL

Our goal is to create a
forecasting model for them
to predict as accurately as
possible future closing
prices

DATA UNDERSTANDING

- ✓ Except for Bitcoin, the business started recording prices for all the other cryptocurrencies later than 24th April, 2017
- ✓ There were no entries with zero volume and recorded prices
- ✓ Bitcoin records the highest valued coin in terms of prices



Cryptocurrencies distribution prices over time

The distribution of all the cryptocurrencies appears to be similar across the years

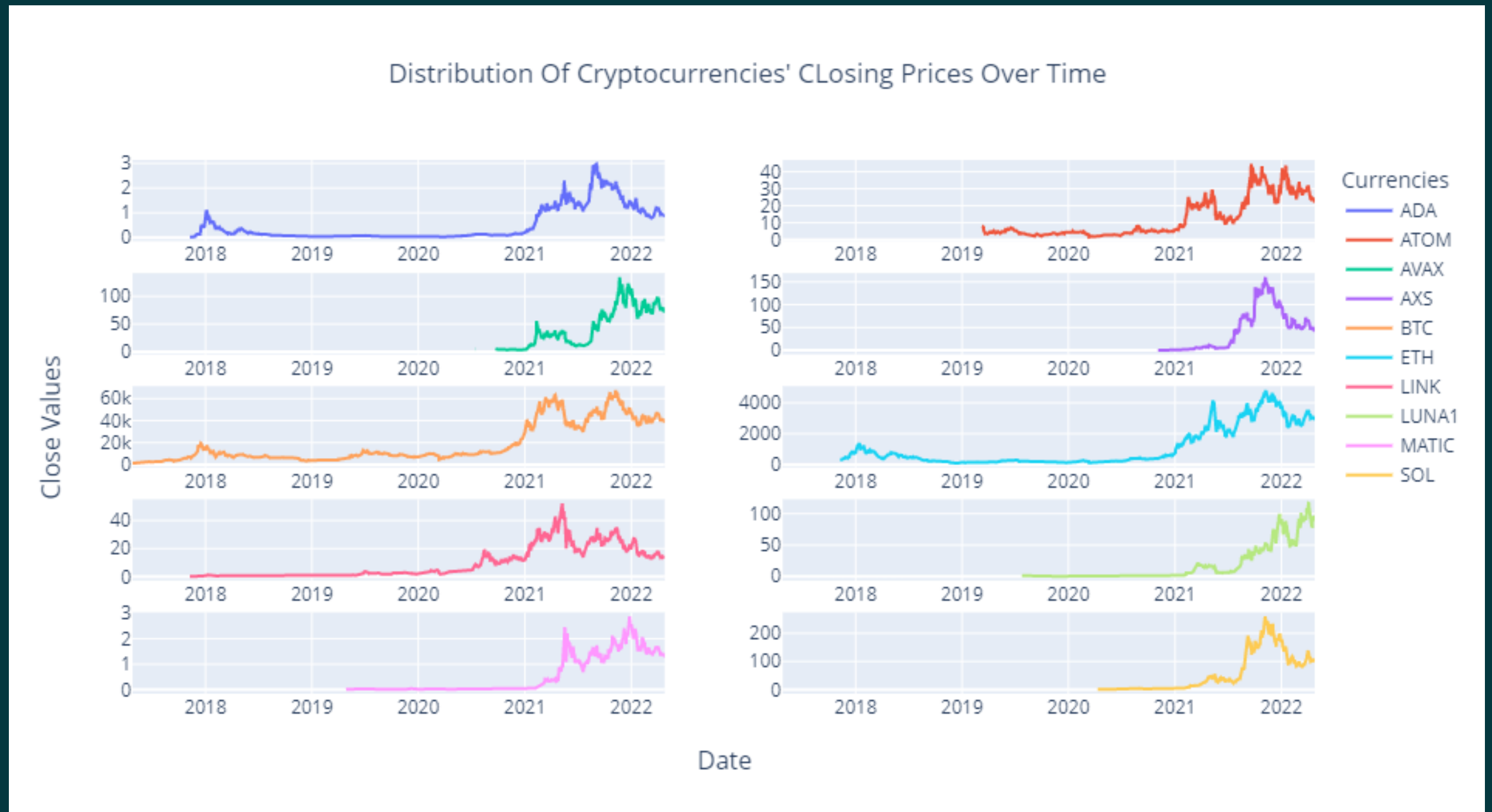
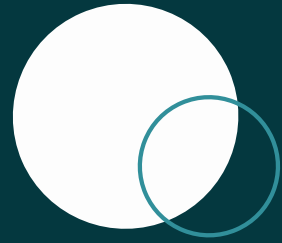


Figure 1. Distribution of Cryptocurrencies' closing prices over time



Cryptocurrencies values in terms of prices

The highest and lowest
Cryptocurrencies Values:

↑
Bitcoin

↓
Matic

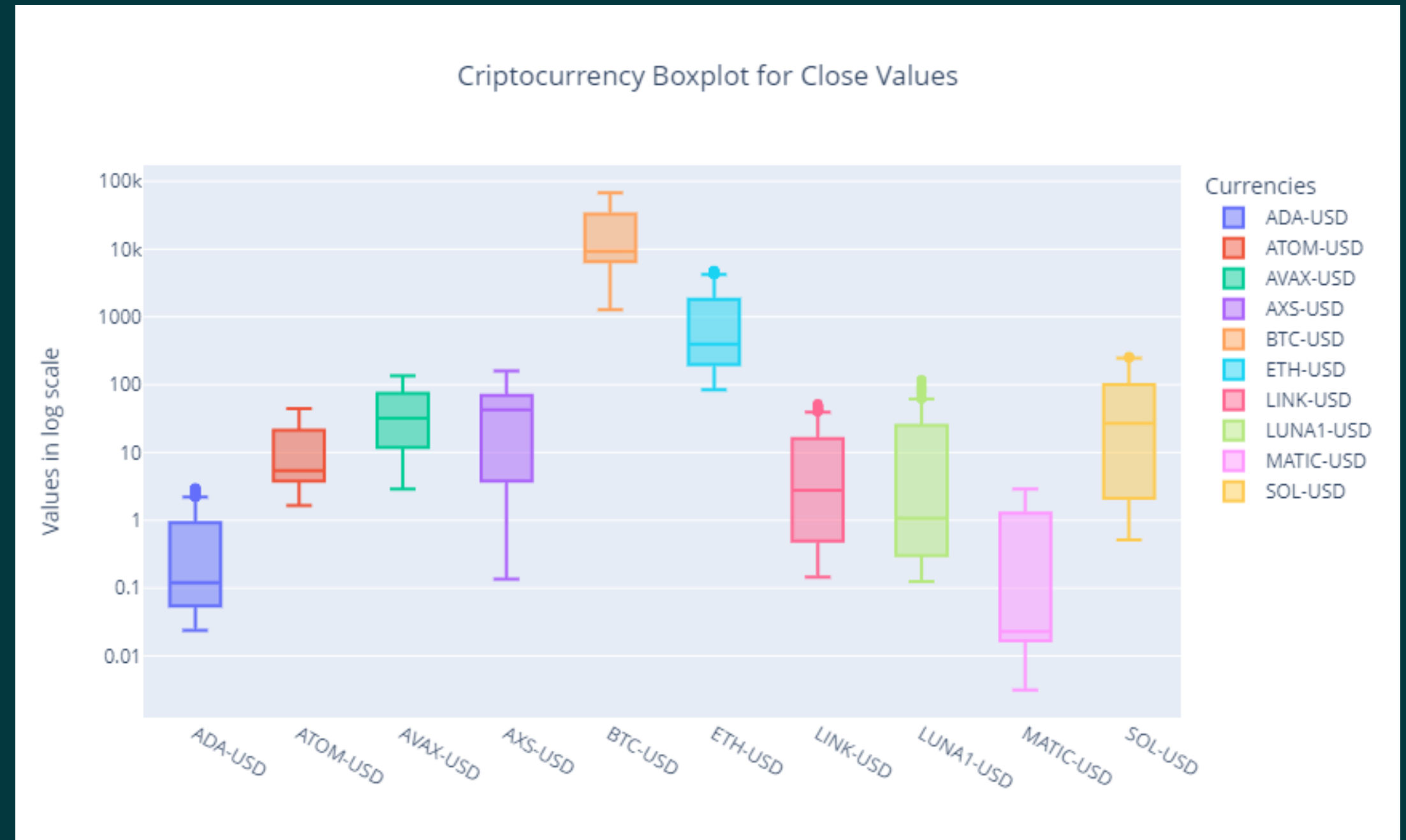


Figure 2. Cryptocurrencies' Boxplots for Closing prices

DATA PREPARATION



Data Cleaning

Deleted the dates in the cryptocurrencies with no recorded entries



Feature Engineering

✓ Calculated trading indicators based on the original features:

- Spread
- Volatility
- Simple Moving Average
- Stochastic Oscillator
- Close off High

✓ **External data:** new variables containing the EUR-USD exchange rate

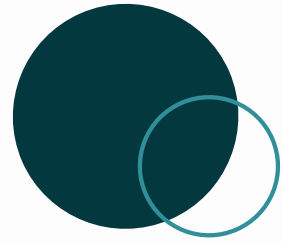
DATA PREPARATION



Normalization & Feature Selection

MinMaxScaler to
scale the datasets

Correlation Matrix: the highly correlated
variables were deleted
(correlations above 0.85 and below -0.85)



MODELING

Algorithms:

LSTM

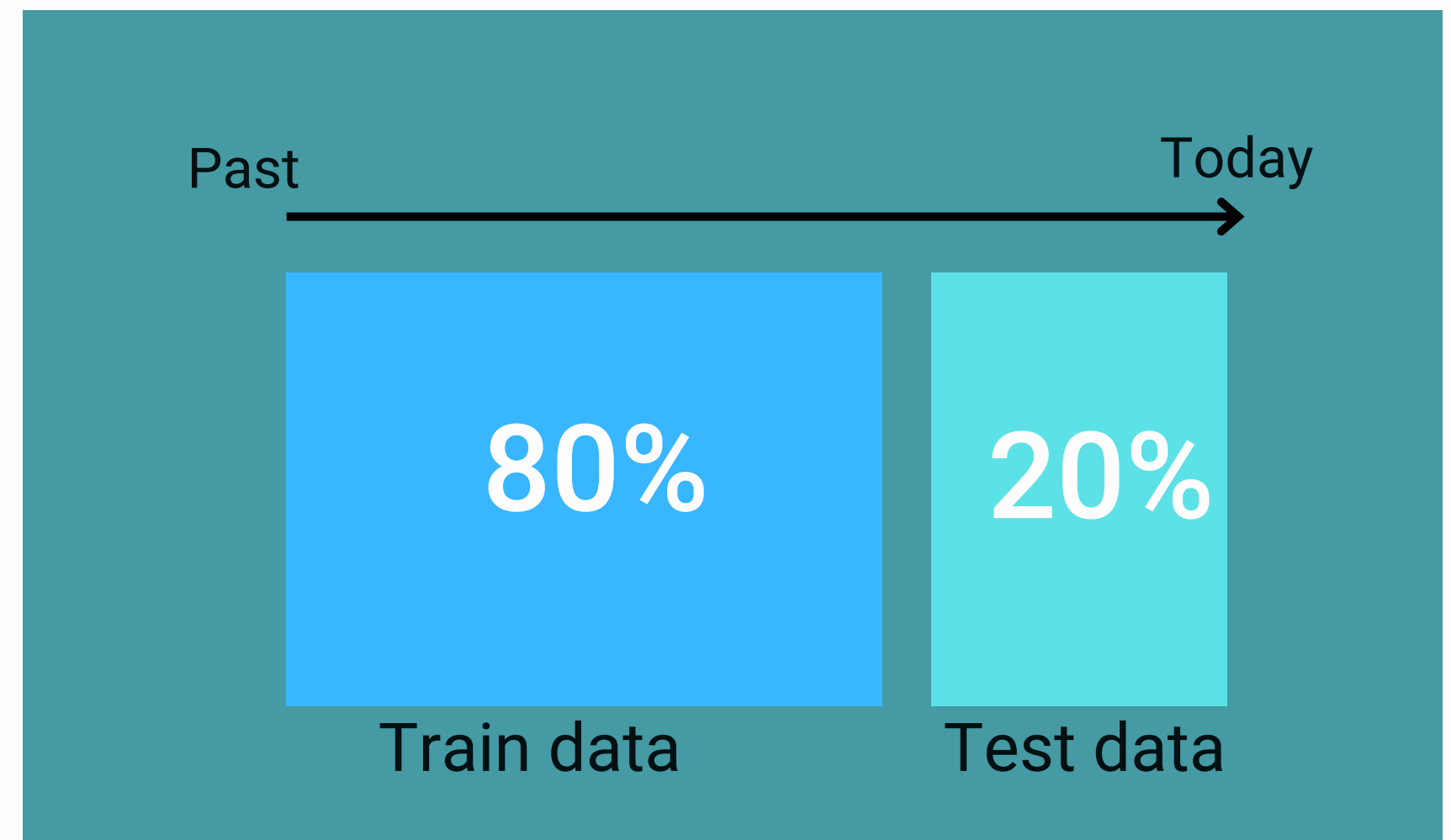
XGBRegressor

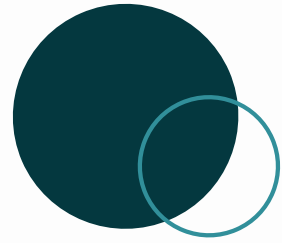
Train/test the models using:

All data

From Jan 1st, 2021

From Jan 1st, 2022





MODELING

Sliding window using:

7 days

20 days

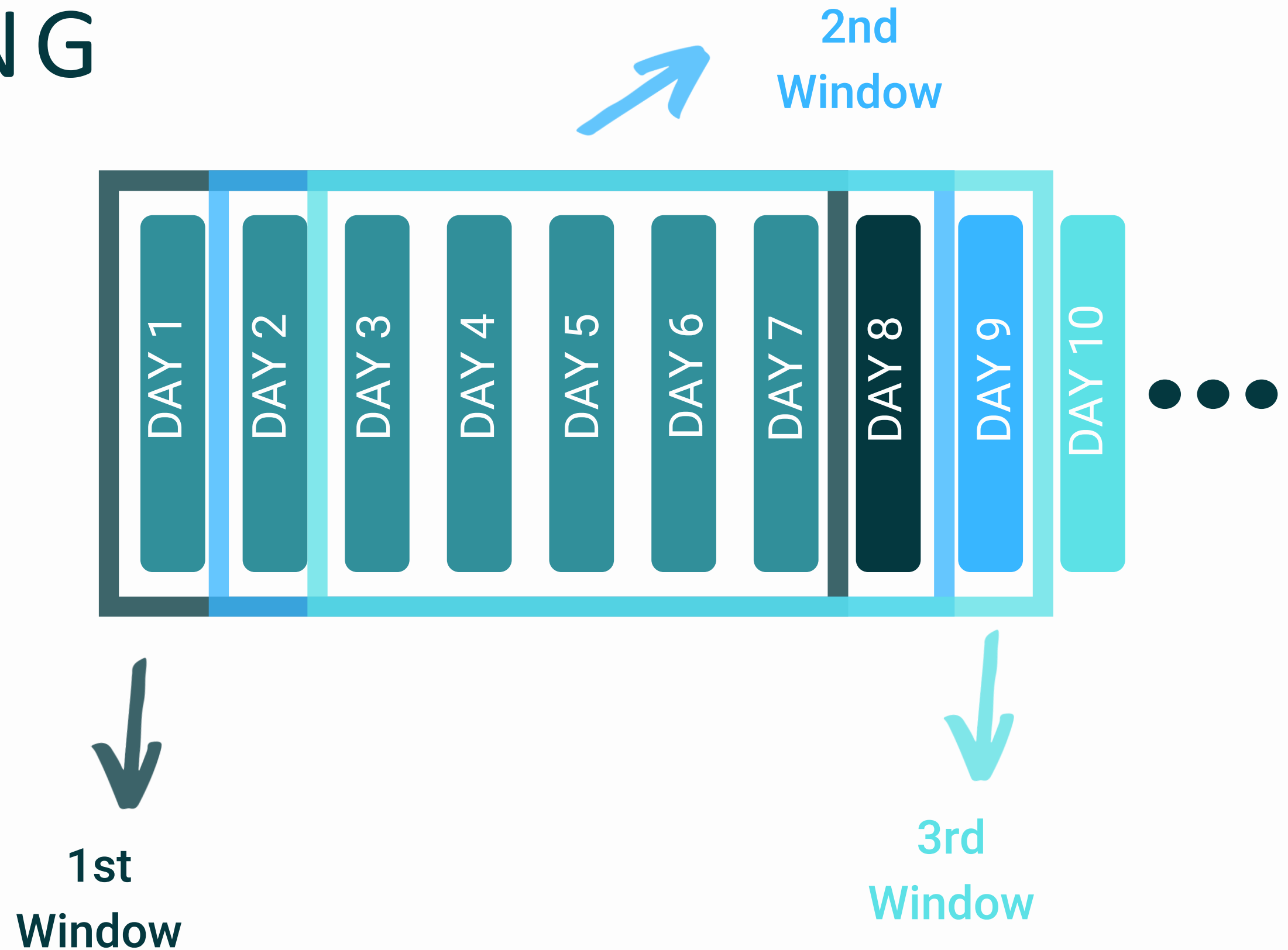
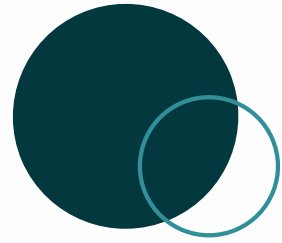


Figure 3. Example of how Sliding Window Technique works



MODELING

Evaluation Metrics

MA

MSE

RMSE

Goal: Minimize the error by reducing the difference between predicted and actual values

FINAL PREDICTIONS

Cryptocurrency	09/05/2022	10/05/2022
BTC	33116.26255	36581.19015
LUNA1	69.62269683	78.04264421
LINK	15.28577545	15.56168104
ETH	2677.089072	2749.476956
SOL	115.2179072	115.6561218
ADA	1.008748097	0.963340599
MATIC	1.056502108	1.208942845
AXS	61.57645498	63.2018159
AVAX	57.73125212	62.0672619
ATOM	17.19707254	19.65041371

Table 1. Final Predictions

BUSINESS IMPLICATIONS OF CRYPTOCURRENCY FORECASTING

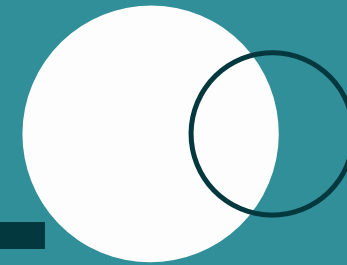
Pros

Learning from prior mistakes or failures might bring insights into trading and so minimize loss and enhance profit

Cons

- ✓ The downside of forecasts is that they are usually wrong, resulting in inventory surplus or shortfall
- ✓ Involve loss of time, resources, and money

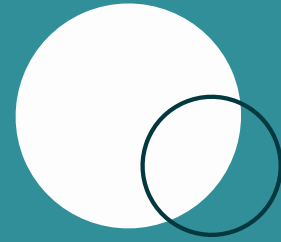
FUTURE RESEARCH



POSSIBLE APPROACH

Add more external data to the dataset in order to obtain better prediction.

Example: Twitter is useful since it allows us to assess the general perspective of investors and individuals (understand the market and the future evolutions of the cryptocurrency prices)



THANK YOU FOR YOUR
ATTENTION!

GROUP V

BC4- MAY 2022

