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# Abstract

This report covers the entire production cycle for two reasonably complex AI models. The intention was to replicate, compare and understand one more widely adopted and reliable model (random forest), with another more recent and complex model (xLSTM-TS). The implementation of which was guided by two case studies with a greater focus on the xLSTM-TS model that are referenced throughout (Tyralis & Papacharalampous, 2017), (Gil et al., 2024) with attention paid to following additional steps when deemed necessary in order to understand the development processes for a project of this nature. The dataset used was collected directly from the yahoo finance API (reference here) instead of procuring a pre-compiled dataset. This choice made due to a lack of datasets with the breadth and depth of feature rich Bitcoin domain specific relevance for a multi-featured time series forecast model.

Some of the additional steps included random forest algorithm being used for the feature selection and a “de-noising” (multi-resolution wavelet) process on the datasets (the process for this was detailed by (Peng et al., 2021)).

Further hyper-parameter tuning was performed on only the random forest model with cross comparison evaluations were conducted upon both models (including before and after tuning) for all eight feature sets generated from the 17 features collect for their potential value in BTC price trend analysis.

Lacklustre performance with

# Introduction

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# Problem statement

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# References

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# Appendix

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(Gil et al., 2024)

(Tyralis & Papacharalampous, 2017)

(Pabuccu & Barbu, 2023)

(Ghosh et al., 2022)