Stock Prediction Task

July 5, 2022

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What Is The Problem?

Stock market prediction is the act of trying to determine the future value of company.

WHY?:

- Because the successful prediction of a stock's future price could yield a significant profit.
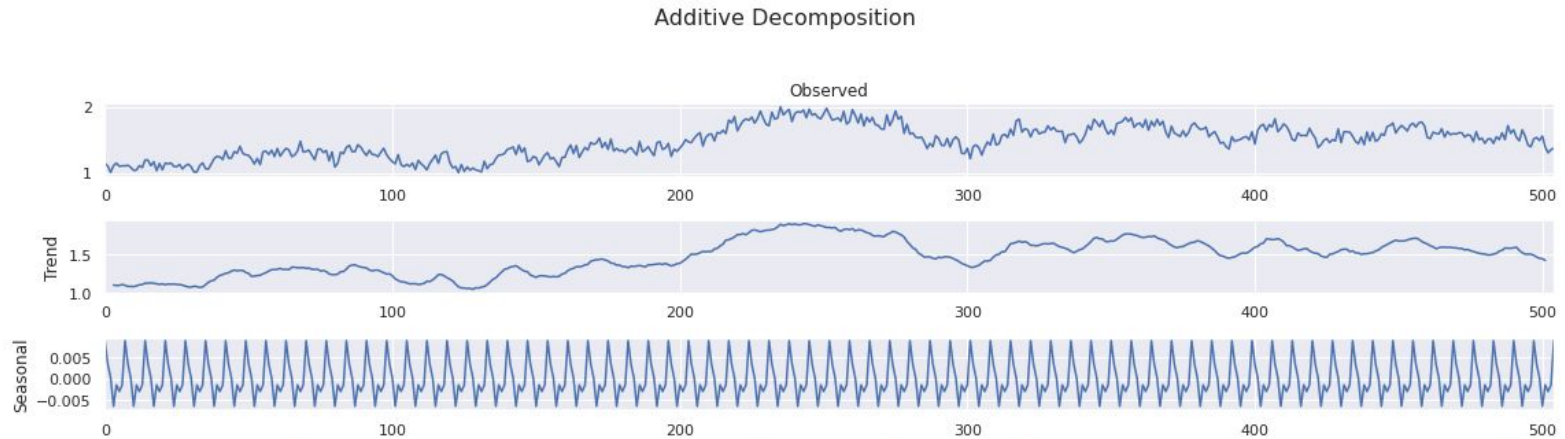
A Quick Look At the Data

- 10 Symbols - each has 505 prices per day (Unknown date)

Price of UCB Stock

A Quick Look At the Data

Trend and Seasonality Decomposition for a sample (UCB)

Extending Features

★

Monotonicity

Change Rate

★

Slope

Weighted Average

Day Of Week
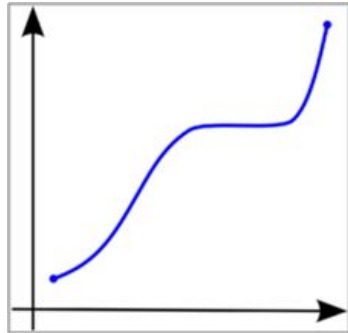
Extending Features

Monotonicity

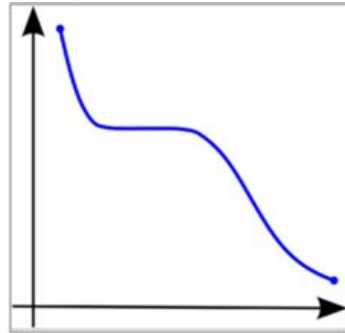Figure 1 - A monotonically increasing function
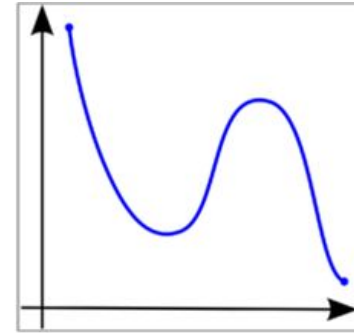
Figure 2 - A monotonically decreasing function

Figure 3 - A function that is not monotonic
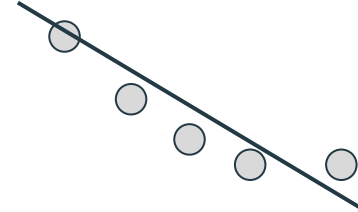
Extending Features

Change Rate

= Price of the Last day ÷ Price of the First day

Slope

= Slope of linear regression on data window

Weighted Average
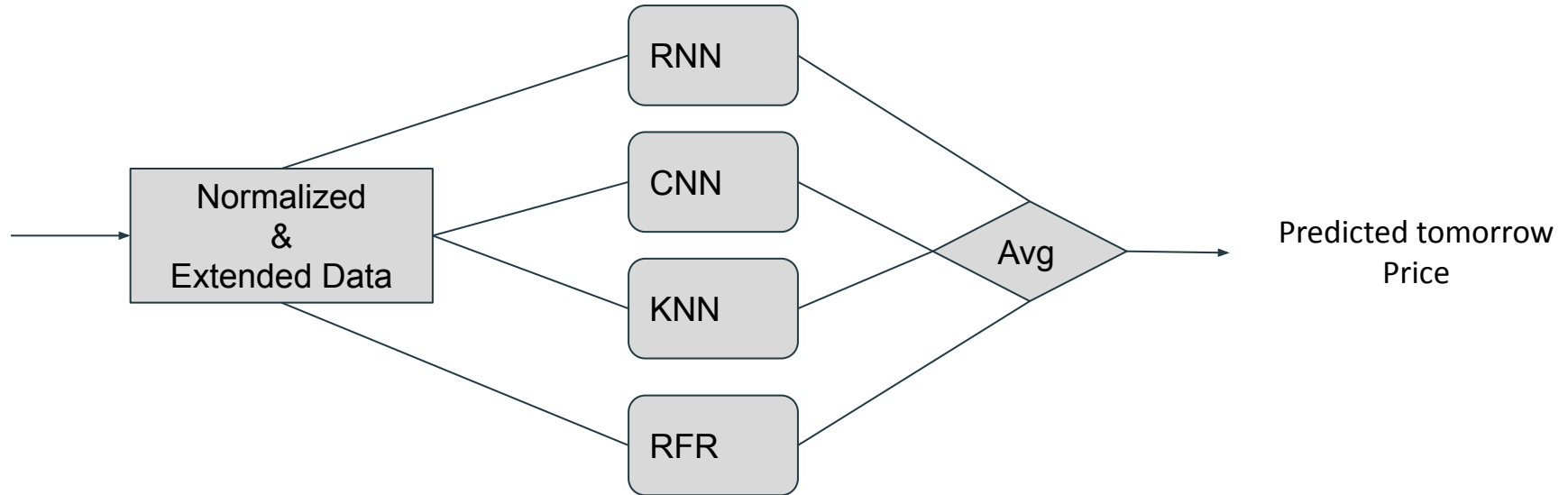
$$\overline{x} = \frac{\sum W_n x_n}{\sum W_n}$$

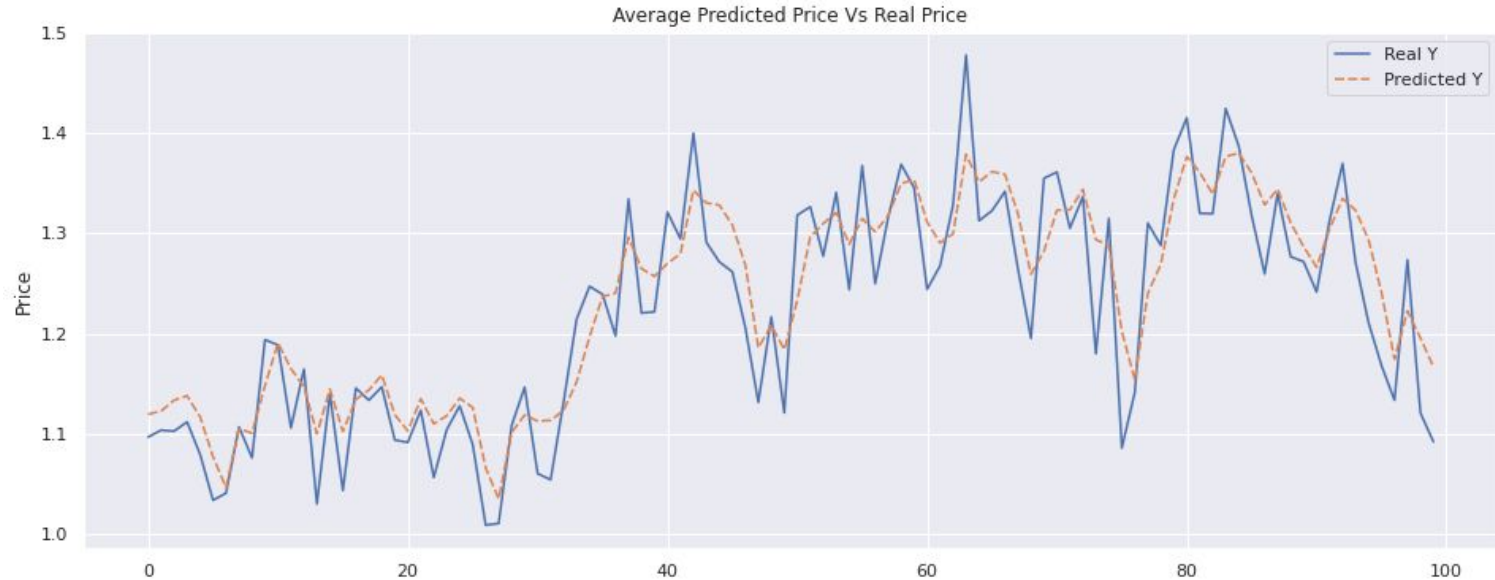Weights -> [0.386, 0.609, 0.791, 0.945, 1.079]

Extending Features

Sample record from UCB Symbol

day 1	day 2	day 3	day 4	day 5	is Monotonic?	Slope	Change Rate	Weighted AVG	Day Of Week
1.1721	1.05954	1.12233	1.13418	1.21386	0	0.0158175	1.03563	0.874049	7
1.05954	1.12233	1.13418	1.21386	1.26718	1	0.0506813	1.19597	0.901468	1
1.36967	1.27103	1.2109	1.16795	1.13329	-1	-0.0575829	0.827422	0.91811	7

Proposed Model

Proposed Model

Average Predicted Price Vs Real Price

Proposed Model

Training Error Vs Validation Error

Proposed Model

If Y' > Y then BUY

Average Predicted Price Y'

Check with Today's price Y

If Y' < Y then SELL

If Y' = Y then KEEP
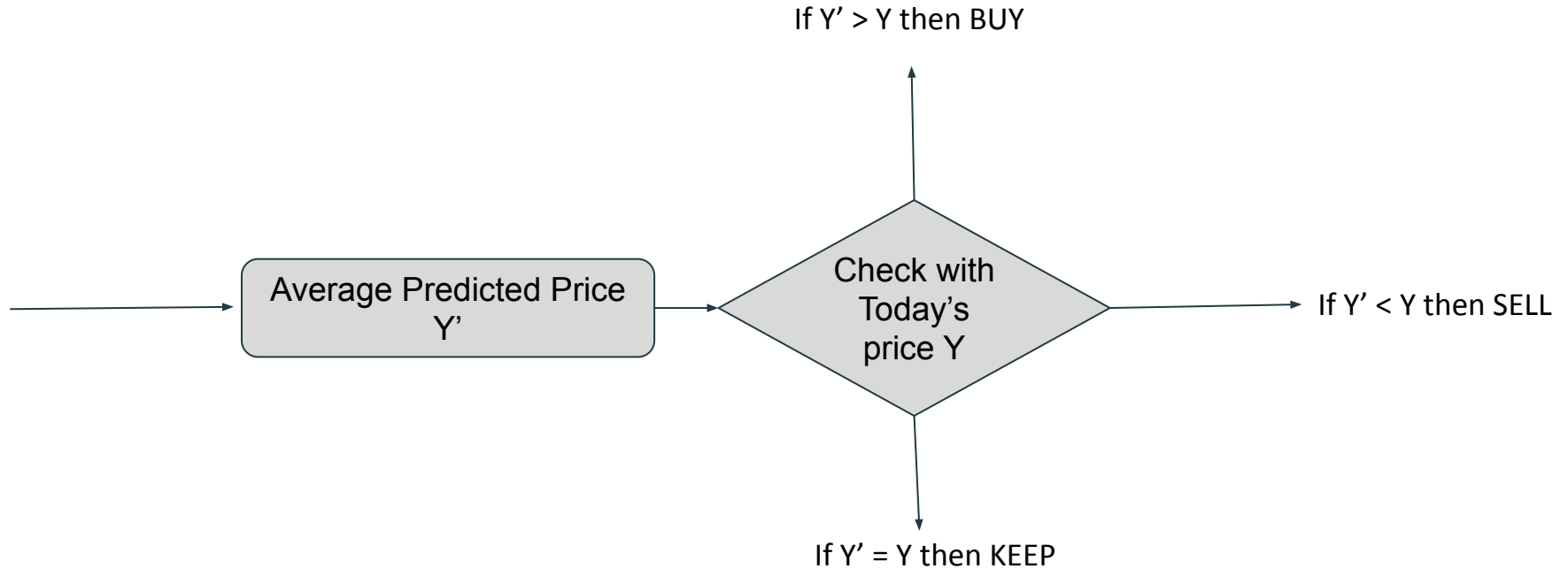
References

- **CNNpred: CNN-based stock market prediction using a diverse set of variables** ,Ehsan Hoseinzade, Saman Haratizadeh ,Expert Systems with Applications, Volume 129, 2019, Pages 273-285, ISSN 0957-4174

Thank You