# Continuous Assessment 3

cm17521

1) (5 points) Plot the predicted and true stock price on a test set and describe your observations from this plot with moving average (MA).

A picture containing graphical user interface

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The first step is to apply the autocorrelation function and plot the results. From the plot we can see that we must use a 0 lag as this is the only point that falls outside the blue band.

Next, we identify a moving average model of an appropriate order (q value).

Make a Moving Average model to predict the stock price on a test set of the AMZN stock price.

Graphical user interface, text

Description automatically generated2) above means suggest what may be causing the fluctuations. Support observations that I make with some suggestions

2) (5 points) Summaries of the process of augmented dickey-fuller test. Use this theory to test and analyze the stationarity of this dataset.

Graphical user interface, text, application, email

Description automatically generatedreference below for CA2 answer:

* Explanations along with key words (1) required.
* (2) must give reasons to back up answer. Yan used window slides, i.e he wanted us to use analysis techique

3) (10 points) Summaries of the research idea development from AR to MA and from MA to ARIMA. Based on your summary, please recognize the weakness of the ARIMA model and give indications to overcome such weaknesses. Requirements: You need to use theoretical math equations and literature to support your arguments.

* Graphical user interface, text

  Description automatically generatedfor reference, Q3 from CA2:
* Show knowledge learned from lectures. Do more than he actually asked basically

4) (10 points) Plot the predicted volatility based on the estimated GRACH model from 01/Dec/2021 to 30/Dec/2021 and show estimation steps, observations and analysis.

Answer from CA2:

* Show step 1) PACF plot and show plot
* Chart, line chart

  Description automatically generatedChoose lag number = 1
* Then give observations. E.g close price is always delayed behind predicted value.

Answer to 5) – strengths and weaknesses of the AR model: can allow us to use the historical data side only. Assumes that the historical data side will ddecide the future AR model. Weakness is that the AR model does not consider variations in the time series, or the AR model is a linear combination but not all real world data is a linear combination. LFTM can overcome such weakness.