



Stocks prices analysis

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Introduction

- As the new technological revolution progresses, and since stocks investment is a life-long responsibility, it needs to be sharpened to compete and get financial freedom.
- It's not difficult to get carried away with the wealth of market data and open-source tools to achieve personal goals.

Methodology

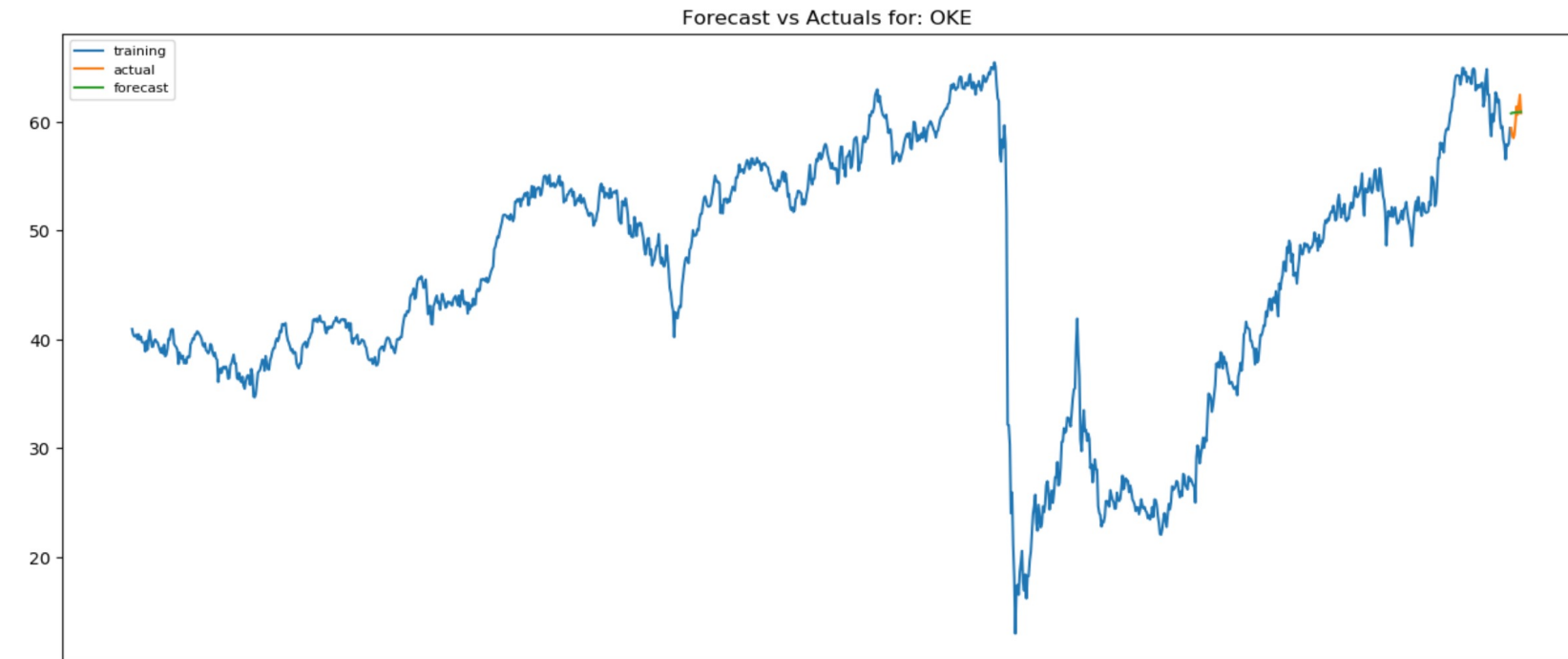
- S&P index stocks closing prices has been used in this project.
(Daily records of 500 companies for 5 years)
- `dropna().values` to rule out any NA value from closing prices column.
- Time series analysis (RRN and ARIMA models).
- Libraries such as: pandas, numpy, matplotlib, keras.models and statsmodels.

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ARIMA(1,1,2)(0,0,0)[0] intercept : AIC=3735.782, Time=1.25 sec
ARIMA(2,1,1)(0,0,0)[0] intercept : AIC=3735.835, Time=1.48 sec
ARIMA(3,1,2)(0,0,0)[0] intercept : AIC=3732.384, Time=2.17 sec
ARIMA(2,1,3)(0,0,0)[0] intercept : AIC=3732.396, Time=2.58 sec
ARIMA(1,1,1)(0,0,0)[0] intercept : AIC=3734.575, Time=0.96 sec
ARIMA(1,1,3)(0,0,0)[0] intercept : AIC=3736.997, Time=1.64 sec
ARIMA(3,1,1)(0,0,0)[0] intercept : AIC=3736.494, Time=1.72 sec
ARIMA(3,1,3)(0,0,0)[0] intercept : AIC=inf, Time=4.85 sec
ARIMA(2,1,2)(0,0,0)[0] : AIC=3728.815, Time=0.88 sec
ARIMA(1,1,2)(0,0,0)[0] : AIC=3733.907, Time=0.56 sec
ARIMA(2,1,1)(0,0,0)[0] : AIC=3733.960, Time=0.63 sec
ARIMA(3,1,2)(0,0,0)[0] : AIC=3730.509, Time=1.37 sec
ARIMA(2,1,3)(0,0,0)[0] : AIC=3730.520, Time=1.64 sec
ARIMA(1,1,1)(0,0,0)[0] : AIC=3732.700, Time=0.32 sec
ARIMA(1,1,3)(0,0,0)[0] : AIC=3735.205, Time=0.75 sec
ARIMA(3,1,1)(0,0,0)[0] : AIC=3734.695, Time=0.63 sec
ARIMA(3,1,3)(0,0,0)[0] : AIC=inf, Time=2.79 sec

```

Best model: ARIMA(2,1,2)(0,0,0)[0]
Total fit time: 29.252 seconds



Stepwise to get better estimation when selecting ARIMA model order.

Conclusion

Accurate stock price prediction is extremely challenging but using multiple models may give some educated insights. Human inputs and intervention is a must besides ML predictions for final decision.