

Stock Market Trends and Modeling

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The Stock Market





Sectors





Goals of this Project





Data Sources

YAHOO!
FINANCE *for*  python™



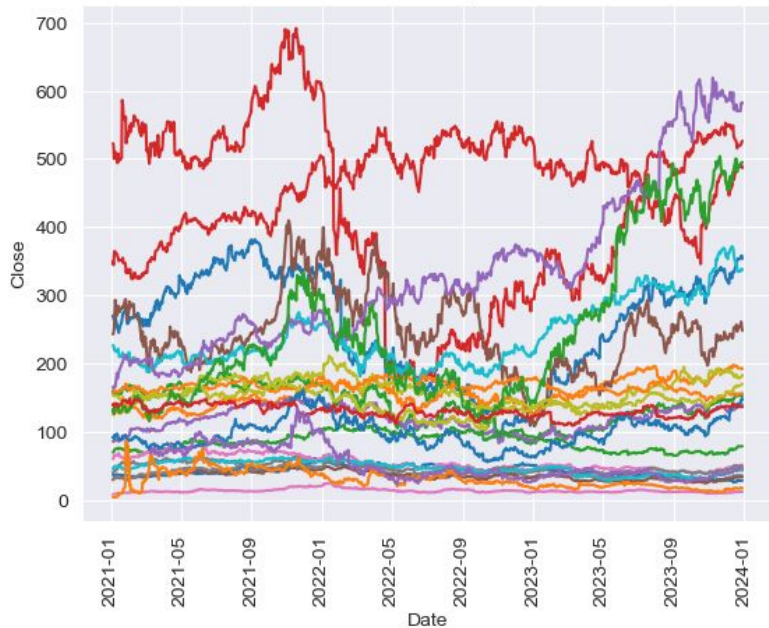
Data Wrangling / Cleaning

- No null values
- Created column 'returns'
 - Percentage Change Daily

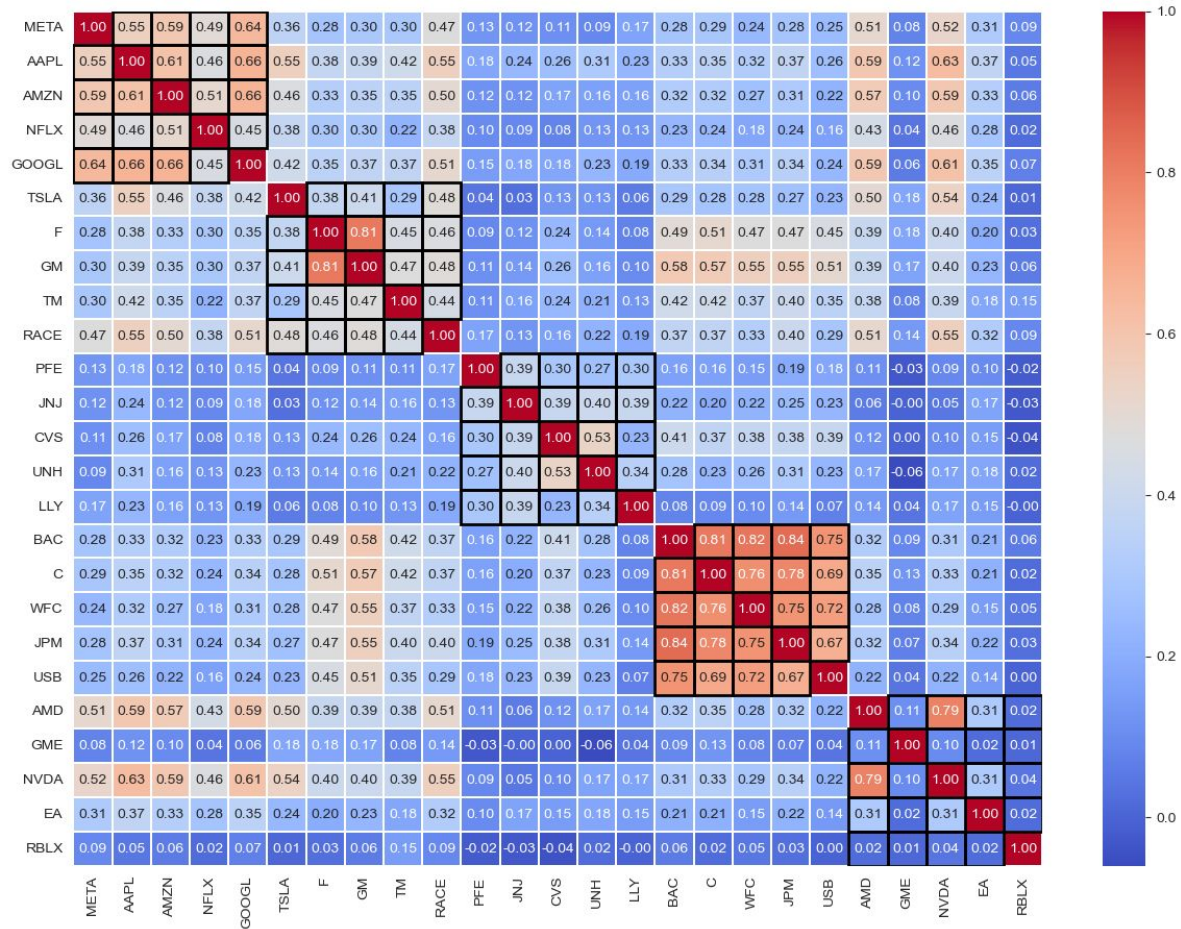


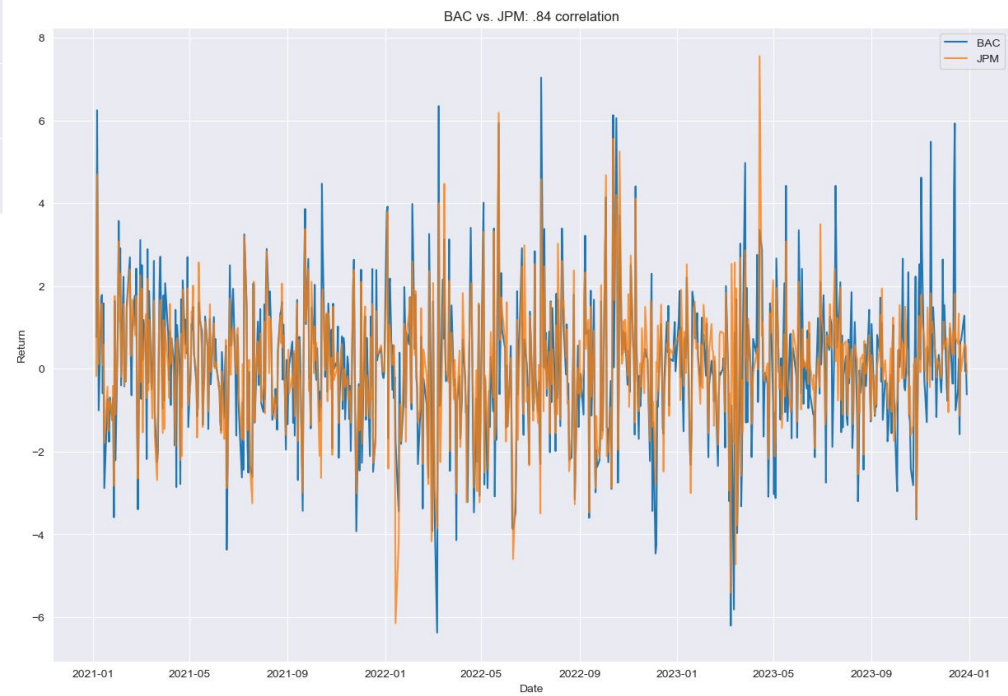
EDA

Stock Prices by Date



games sector data features correlation







Modeling

1. ARIMA MODEL
 - a. Auto ARIMA function to automate process



Auto ARIMA

```
from statsmodels.tsa.arma.model import ARIMA
from pmdarima.arma import auto_arma

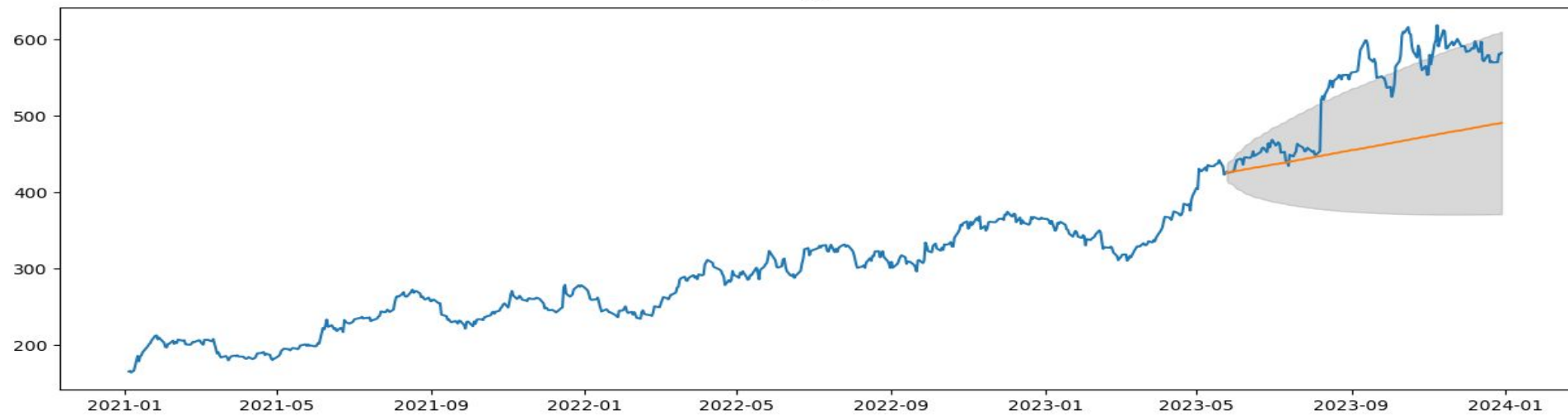
for stock in stockDataClose:
    chosen = stockDataClose[stock]
    chosen = chosen.set_index('Date')
    train_data, test_data = chosen[3:int(len(chosen)*0.9)], chosen[int(len(chosen)*0.9):]

    model = auto_arma(train_data, start_p=1, start_q=1,
                      test='adf',
                      max_p=5, max_q=5,
                      m=1,
                      d=1,
                      seasonal=True,
                      start_P=0,
                      D=None,
                      trace=True,
                      error_action='ignore',
                      suppress_warnings=True,
                      stepwise=True)

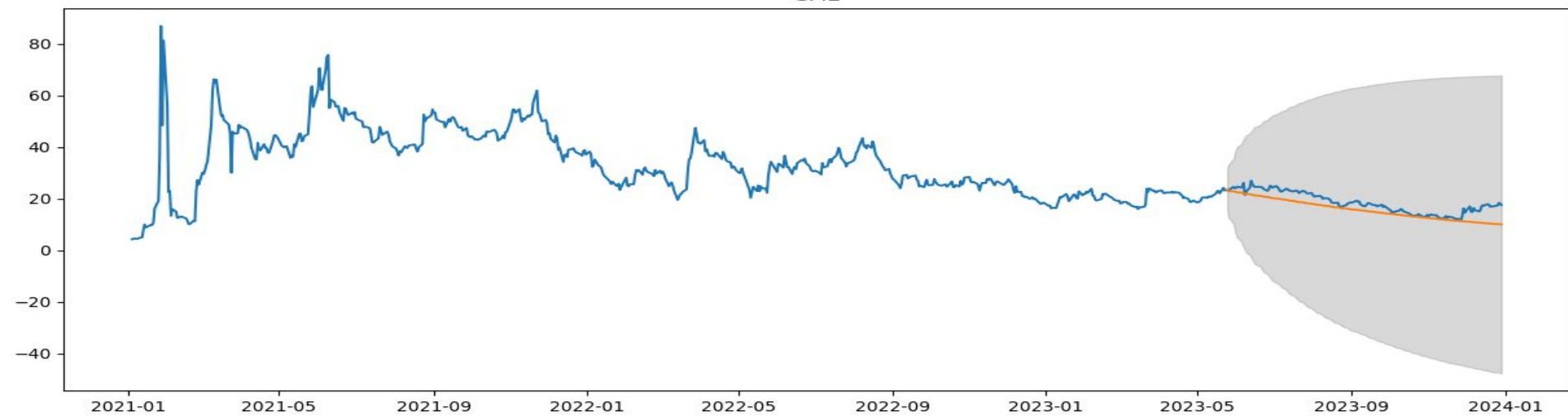
    p,d,q = model.order
    prediction, confint = model.predict(n_periods=test_data.shape[0], return_conf_int=True)
    cf= pd.DataFrame(confint)

    prediction_series = pd.Series(prediction.values,index=test_data.index)
    fig, ax = plt.subplots(1, 1, figsize=(15, 5))
    ax.plot(chosen['Close'])
    ax.plot(prediction_series)
    ax.set_title(stock)
    ax.fill_between(prediction_series.index,
                    cf[0],
                    cf[1],color='grey',alpha=.3)
```

LLY



GME



Stock Outlook

LLY:	15.24%
NVDA:	14.23%
GOOGL:	7.14%
WFC:	6.82%
UNH:	6.81%
F:	6.19%
AAPL:	6.16%
RACE:	5.21%
AMD:	3.68%
JPM:	1.74%
PFE:	1.25%
JNJ:	0.03%
CVS:	-0.18%
BAC:	-1.74%
META:	-1.98%
EA:	-2.02%
TM:	-2.5%
GM:	-6.37%
TSLA:	-8.08%
C:	-8.88%
AMZN:	-9.11%
NFLX:	-10.82%
USB:	-12.41%
RBLX:	-19.97%
GME:	-57.42%

Tech Outlook: -1.72%

Cars Outlook: -1.11%

Health Outlook: 4.63%

Finance Outlook: -2.9%

Games Outlook: -12.3%



Analysis

- Best Outlook: Tech Stocks (LLY)
- Worst Outlook: Game Stocks (GME)
- Stocks not easy to predict
 - Otherwise, everyone would be rich
- ARIMA needs more tuning



Thank you!