Problem:

Financial stock market trading is a convenient avenue for many individual and institutional investors to make money. At the click of an app on the cell phone, investors can easily make or lose money depending on how well their perceptions align with the rest of the "market." Yet, it is a very difficult task to try to predict which stocks will fall or rise and when because the stock market is very complex. Fortunately, there is a lot of historical data available online on stock prices over time to be able to analyze fluctuations in stock prices, seasonality, and find correlations in the collective movement of similar stocks.

For this project, I will be looking particularly a the ESV (Ensco) stock to analyze trends and to forecast the stock price at any given time. Ensco is the world's second-largest offshore drilling and well drilling company, headquartered in London, United Kingdom. The company was initially founded in 1975 and has undergone several acquisition changes over the years. My specific goals in analyzing stock prices for ESV are:

1) To predict ESV stock price at a given time/day/week/month
2) To find other closely related stocks
3) To find negatively correlated stocks
4) To find relationships of stock prices with other related factors like earning call data
5) To analyze if ESV price movement is correlated with that of S&P or other industries

In doing so, I hope to provide a better understanding to the traders of this stock on when the stock prices dip and rise so that they can more effectively develop strategies for their daily trades. The final goal of this project is to develop a forecasting model that will allow easy profiting for the trader with minimal risk.

Data:

For this project, I will be using data from Yahoo Finance. This source contains daily data on stock prices for ESV starting from the mid 1980s. The data contains values on the opening, closing, highest, and lowest prices for each day. I will also collect similar data on the S&P 500 stock market index as well as a few other stocks (TBD) to compare ESV movement against them.

I will also need to augment the stock price data by adding additional data on industry and market performance to compare these against ESV performance.

Analysis Approach:

I plan on conducting a time series analysis with an ARIMA (autoregressive integrated moving average) model to better understand historical stock data and to forecast by predicting future points in the series. An ARIMA model works well for stock data because it is able to forecast future points by looking at differences between values in the series instead of through the actual values.

Python also has a package called Stocker that is specifically built for analysis of stock market data.