Research:

1. [$tock Forecasting using Machine Learning](https://web.stanford.edu/~kalouche/docs/AI.pdf)
   1. abstract : We present an implementation of 3 different machine learning algorithms — gradient descent, support vector machine, and a deep neural network — which attempt to model and forecast individual stock prices at some future date based on a set of 11 company related features. We vary internal parameters of each algorithm (optimization step size, epoch number, lossfunction, hypothesis functions, number of hidden layers,etc.) as well as more intuitive feature-based parameters(forecast horizon, window length, etc.). We summarize and present the performance of several experiments and indicate which physical parameters are most influential to the model in producing the model with the best 1-day,10-day, and 20-day stock price horizon.
2. [Short-term stock market price trend prediction using a comprehensive deep learning system](https://journalofbigdata.springeropen.com/articles/10.1186/s40537-020-00333-6)
   1. Abstract: In the era of big data, deep learning for predicting stock market prices and trends has become even more popular than before. We collected 2 years of data from Chinese stock market and proposed a comprehensive customization of feature engineering and deep learning-based model for predicting price trend of stock markets. The proposed solution is comprehensive as it includes pre-processing of the stock market dataset, utilization of multiple feature engineering techniques, combined with a customized deep learning based system for stock market price trend prediction. We conducted comprehensive evaluations on frequently used machine learning models and conclude that our proposed solution outperforms due to the comprehensive feature engineering that we built. The system achieves overall high accuracy for stock market trend prediction. With the detailed design and evaluation of prediction term lengths, feature engineering, and data pre-processing methods, this work contributes to the stock analysis research community both in the financial and technical domains.
3. [[2009.10819] Stock Price Prediction Using Machine Learning and LSTM-Based Deep Learning Models](https://arxiv.org/abs/2009.10819)
   1. Abstract: Prediction of stock prices has been an important area of research for a long time. While supporters of the efficient market hypothesis believe that it is impossible to predict stock prices accurately, there are formal propositions demonstrating that accurate modeling and designing of appropriate variables may lead to models using which stock prices and stock price movement patterns can be very accurately predicted. In this work, we propose an approach of hybrid modeling for stock price prediction building different machine learning and deep learning-based models. For the purpose of our study, we have used NIFTY 50 index values of the National Stock Exchange (NSE) of India, during the period December 29, 2014 till July 31, 2020. We have built eight regression models using the training data that consisted of NIFTY 50 index records during December 29, 2014 till December 28, 2018. Using these regression models, we predicted the open values of NIFTY 50 for the period December 31, 2018 till July 31, 2020. We, then, augment the predictive power of our forecasting framework by building four deep learning-based regression models using long-and short-term memory (LSTM) networks with a novel approach of walk-forward validation. We exploit the power of LSTM regression models in forecasting the future NIFTY 50 open values using four different models that differ in their architecture and in the structure of their input data. Extensive results are presented on various metrics for the all the regression models. The results clearly indicate that the LSTM-based univariate model that uses one-week prior data as input for predicting the next week open value of the NIFTY 50 time series is the most accurate model.

Resources: