

Deep Learning and Reinforcement Learning for Trading Financial Assets

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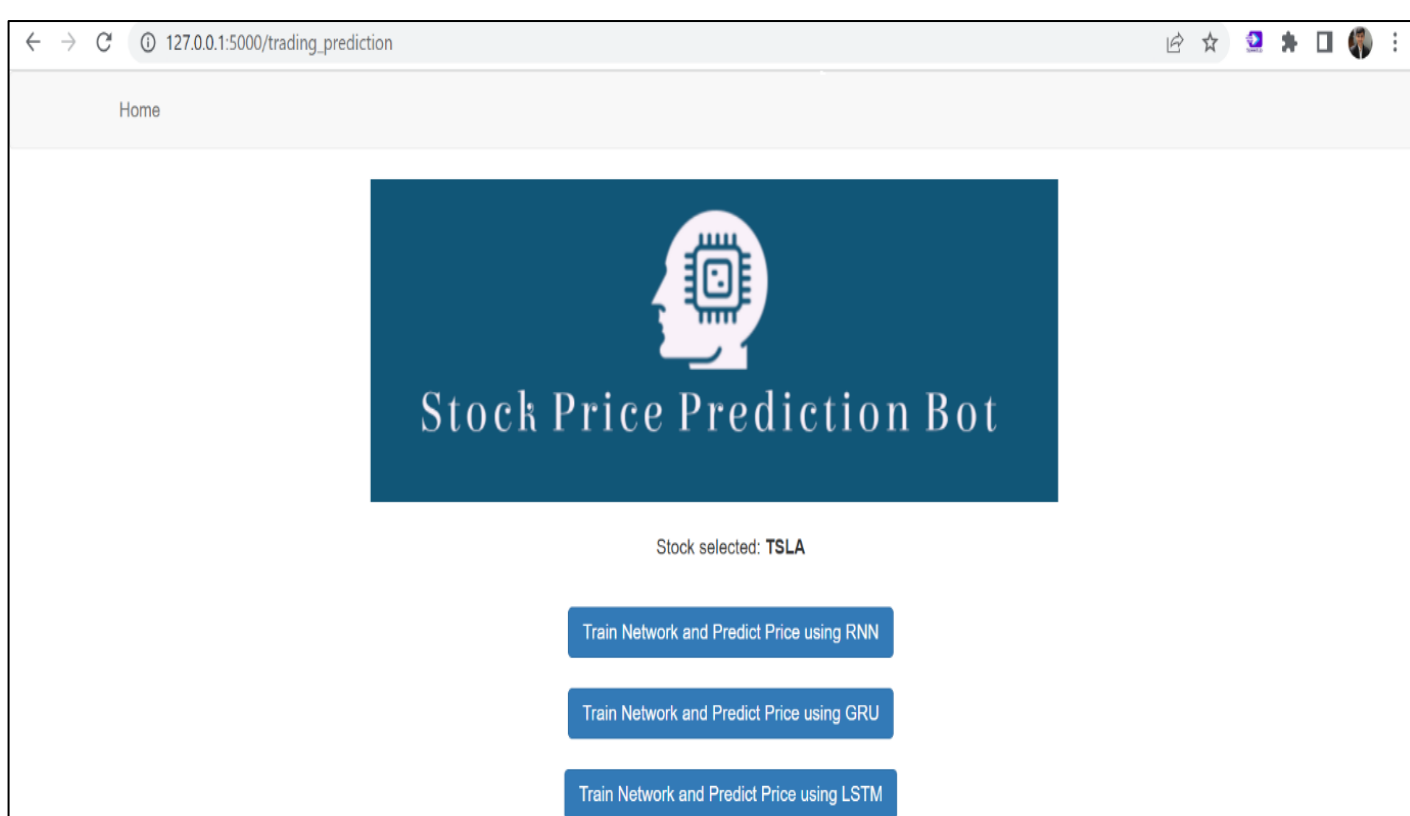
Project Objectives:

The objective of this project was to develop techniques using Deep Learning which can help users to make informed decisions regarding their financial assets such as stocks, forex and cryptocurrencies. The project strives to achieve the following goals:

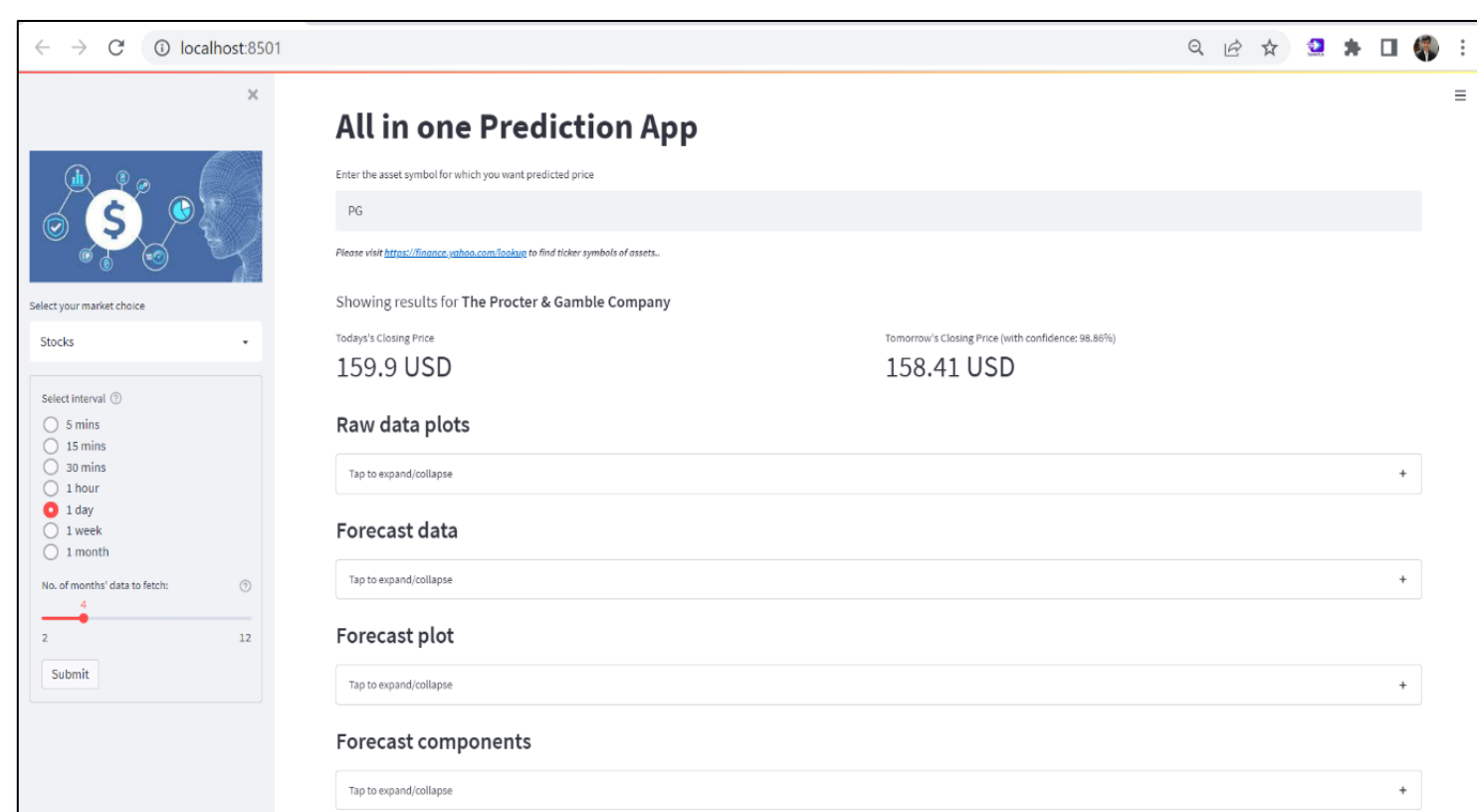
- Analyze different recurrent neural network model structures which are suited for time series predictions and compare their results for financial markets.
- Develop a web application to use predictive models for stock prices in a user-friendly way.
- Develop a web application which uses Fbprophet to predict multiple financial asset prices.
- Develop a trading agent using Reinforcement Learning.

Results:

- We considered stocks from 7 different industries to check robustness of our models.
- Among the Recurrent Neural Networks, Simple RNN performed the worst. Bi-directional LSTM and GRU performed better while LSTM and RNN-Attention models performed the best.
- Our trading agent was able to generate about 3-4% higher returns for most of the stocks as compared to a baseline strategy of Long Investing.
- We developed two applications: one using HTML, CSS and Flask for running models for Stock Price prediction; another using Streamlit to run Fbprophet model for predicting prices of Stocks, Forex and Cryptocurrencies all together.



Stock Price Prediction App



Price prediction app for multiple financial assets