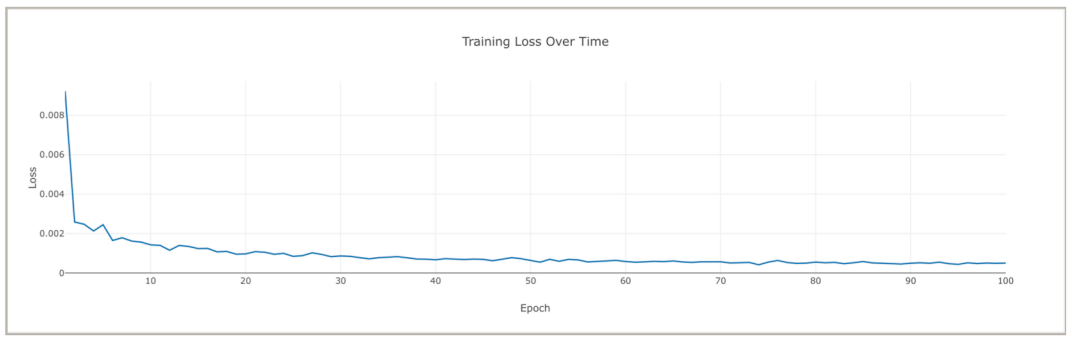
STOCK PREDICTION?

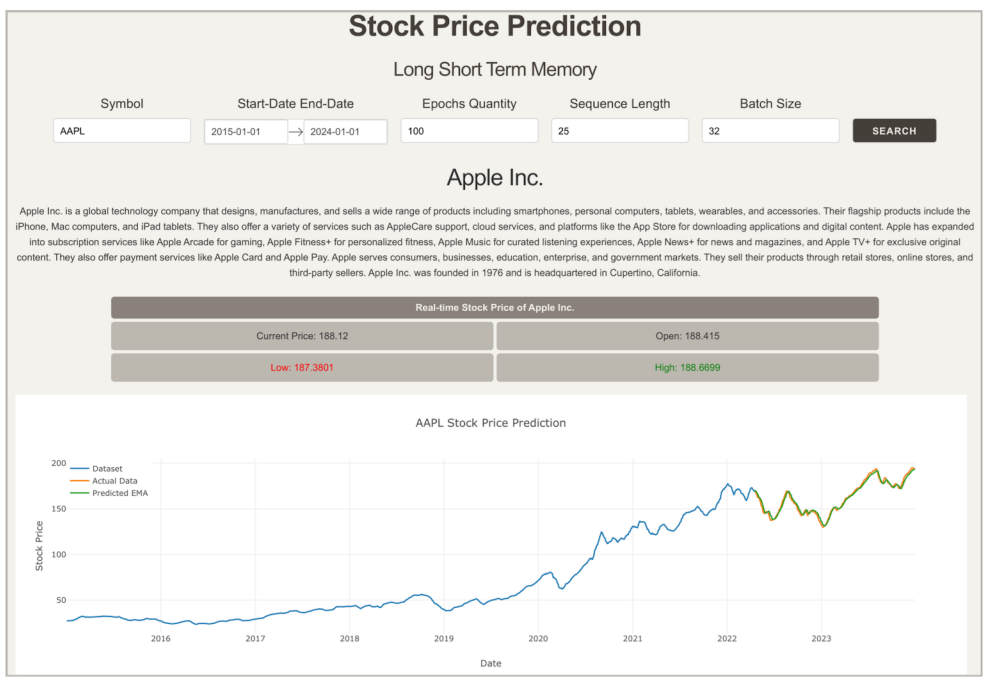
Long Short-Term Memory

- LSTM is a type of recurrent neural network (RNN) that excels in learning from sequences of data like volatile stock prices.
- Data collection- Historical stock price data from Yahoo! Finance is gathered to predict stock prices
- Training - Trained on two LSTM layers along with dropout layers (a process to prevent overfitting) whilst a single dense layer works as a final output layer for making predictions.
- The LSTM model acts as a foundation for our web application.
- Training loss over time - provides valuable insight into the learning dynamics of our LSTM network.
- The graph below shows how well our model learnt and predicted stock prices compared to the actual data without any overfitting or underfitting however the learning of the network heavily relies on user parameter inputs.



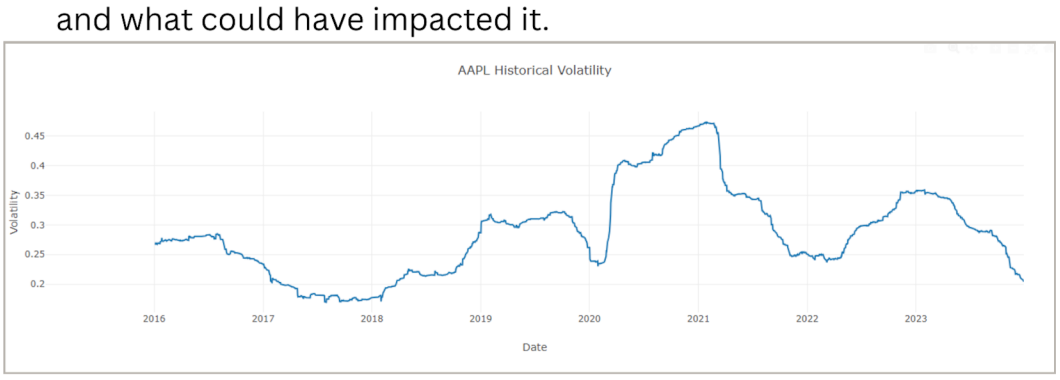
User Interface powered by Dash

- Provides a simple interface via Dash for data visualisation (viewing our algorithmic predictions compared to the actual prices).
- Required inputs from the user - Symbol, Epochs quantity, Sequence length and Batch Size then click the “SEARCH” button.
- Displays a summary and the real-time stock prices of the company according to the user input.



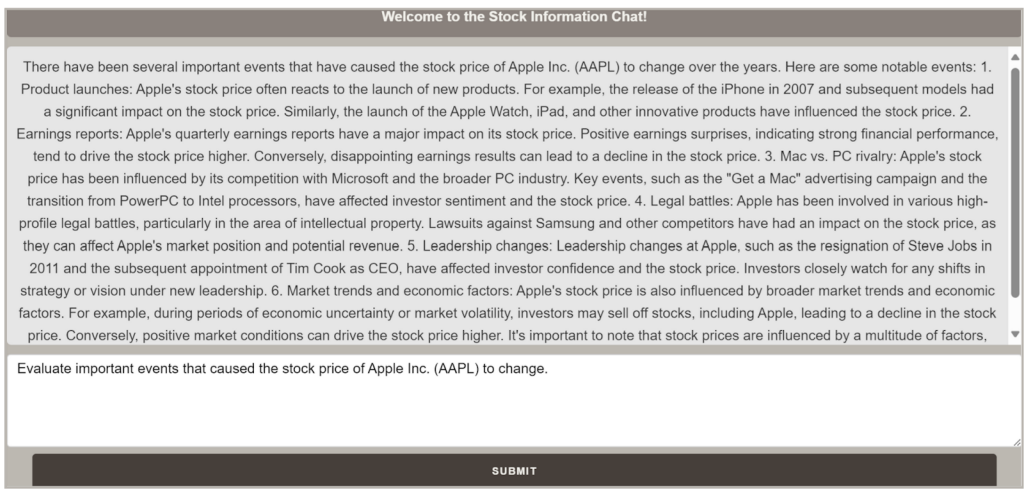
Features

- **Downloadable Graph:** Offers the option to download the prediction graph as a PNG image.
- **Real-time Updates:** Fetches and displays real-time stock information.
- **Dynamic Plotting:** Generates interactive plots for stock price predictions and the actual prices.
- **Training Loss over time:** Illustrates the model’s performance over time.
- **Symbol, Epochs quantity, Batch size and Sequence length Customisation:** These parameters can be customised by users based on preferences however the optimum figures are 75, 32 and 25.
- **Historical Volatility Visualisation**: Shows how much a particular stock’s price increases or decreases over a period of time.
- **Chat Box(Analyst Companion):** Using the OpenAI’s API, The user can request additional information regarding the selected stock and what could have impacted it.



Analyst Companion

- Our program uses ChatGPT turbo 3.5 for users to ask questions and get information about stock prices with our AI assistant. For example, you could ask our AI assistant questions like why the price of a particular stock decreased in a specific month.
- User-friendly and easy-to-use chatbot - The context for the chat is provided beforehand so users can simply ask questions and get the most relevant and accurate response.
- ChatGPT 3.5 - has a knowledge cut-off of April 2023 so it is not aware of the financial information, events or data that past the cut-off period.
- OpenAI API model can be easily changed to switch from gpt-3.5-turbo to other models such as gpt-4-turbo.



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