| **Title** | **:** | Stock Price Prediction |
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**Abstract**

In today’s fast-paced financial world, investors and analysts are constantly looking for better ways to anticipate stock market movements. Stock prices fluctuate due to a mix of internal factors like earnings and external forces such as political events or global economic changes. Because of this complexity, traditional forecasting tools like Moving Averages, ARIMA, or basic regression models often fall short, especially when the data behaves in unpredictable, non-linear ways.

To address this challenge, this project explores the use of Long Short-Term Memory (LSTM) networks, a type of deep learning model that is especially good at learning from time series data. LSTM is built to remember long-term patterns, making it a strong fit for predicting stock price trends. I trained the model on real-world stock data and carefully tuned it using Keras Tuner to get the best possible performance. But accurate predictions aren’t enough. A key part of this project was making those predictions understandable to real users. That’s why I built an interactive web app using Streamlit. The app lets users select a stock, choose how many days into the future they want to predict, and then view both past and predicted prices on a graph. They can also download historical data or filter it by date, giving them more control and flexibility in how they use the tool.

Initially, I planned to integrate Firebase for real-time cloud updates and Power BI for professional dashboards. However, due to time constraints and technical limitations, these features were postponed. Despite that, the project is designed in a way that makes future integration straightforward by using Streamlit.

Overall, this project combines the power of deep learning with a simple, user-friendly interface. It bridges the gap between technical accuracy and usability, turning complex data into something investors can actually act on. It’s a step toward smarter, more accessible financial forecasting.