ABSTRACT

Smart Stock Trend Forecasting & Auto-Recommendation system using LSTM Neural Networks

By
Abdul Vahed Shaik
Chirudeep Gorle
Namratha Kurapati
Shailaja Ramachandrapuram

The project operates within the broader domain of financial markets, encompassing both the traditional stock market and the dynamic cryptocurrency market. These markets are renowned for their inherent volatility and unpredictability, making them challenging arenas for investors and financial professionals alike. Traditional methods of analyzing and predicting market trends have often fallen short in capturing the intricacies of these financial ecosystems. However, the advent of machine learning presents an exciting opportunity to bring data-driven decision- making to the forefront, potentially revolutionizing the way we navigate these complex financial landscapes. Within the domain of financial markets, a pressing problem emerges due to the intricate nature of market data. The stock market, for instance, is influenced by a myriad of interconnected factors, including economic indicators, geopolitical events, and investor sentiment. Traditional statistical approaches have struggled to effectively analyze and predict market trends because they often fail to account for these interdependencies. Recognizing this challenge, machine learning-based methods have gained traction. These methods, armed with diverse datasets encompassing historical stock prices, trading volumes, and technical indicators, have the potential to uncover intricate patterns that elude conventional approaches. However, the real challenge lies in harnessing these machine learning algorithms effectively to address the ever- shifting landscape of financial markets.

To address these issues, we utilized the Yahoo Finance library to gather the necessary data. Leveraging this data, we trained our models, predominantly employing Long Short-Term Memory (LSTM) networks due to their proficiency in handling sequential data, especially well-suited for modeling stock market trends. Our methodology encompasses extensive historical data, facilitating the optimization of model configurations, rigorous cross-validation techniques, and fine-tuning of hyperparameters. Through this process, we aim to empower investors and traders with more accurate predictions, enabling them to make well-informed decisions that mitigate risks and maximize profits. Furthermore, we've extended our focus to the realm of cryptocurrency trading. Here, we've introduced automated trading robots utilizing technical analysis and automation to streamline trading strategies. These robots not only enhance efficiency but also employ sophisticated risk management techniques, thereby improving the financial landscape for both novice and experienced traders.

In essence, our project represents the convergence of technology and finance, offering innovative solutions to navigate the complexities of modern financial markets. As a recommendation, our algorithm generates insights on whether to sell, hold, or buy stocks based on the analyzed data, further aiding investors in their decision-making process.