FINSYNC AI: Stock Market Analysis

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Abstract: *The goal of the study "FINSYNC AI" is to enhance the accuracy and effectiveness of financial market forecasts by introducing a complex stock market prediction system. This work makes use of the frameworks Gradient Boosting Machine, Random Forest, Long Short-Term Memory (LSTM), and the proposed FINSYNC AI. The process involves acquiring historical stock market data, cleaning and normalizing it, and then feature engineering to produce new features like rolling means and trend components. These preprocessed data are then used to test and train several machine learning models in order to assess their predictive accuracy. Given the inadequacies of previous techniques, the FINSYNC AI is proposed as a means to improve their effectiveness. The project is broken down into three primary modules to guarantee a comprehensive process: creating and refining the framework, obtaining and prepping the data, and the prediction stage and evaluation. The Python implementation of the machine learning tasks makes use of scikit-learn, pandas for data management, yfinance for acquiring stock data, and matplotlib for visualization. The results show that the FINSYNC AI performs better than traditional one, making it a more useful tool for value trading in the stock market.*

Keywords: Long Short-Term Memory (LSTM), Random Forest, Gradient Boosting Machines, Stock Market Prediction, Machine Learning, Financial Forecasting, Data Pre- processing, Feature Engineering and FINSYNC AI.