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(57) Abstract :

The present invention relates to the development of a stock market trend prediction has always been a major challenge because of the natural volatility and non-linear characteristics of financial data. In this paper, a new machine learning solution is presented by combining Long Short-Term Memory (LSTM) networks with an optimized Feature Selection (FS) strategy to improve the accuracy of trend prediction. Unlike other statistical models, our proposed hybrid system is capable of handling long-term dependencies and noise filtering in multi-dimensional financial data, such as historical stock prices and technical analysis variables such as the Relative Strength Index (RSI). The experimental results on the S&P 500 index show that our proposed model has a Mean Squared Error (MSE) of 0.0042, which is a substantial improvement over the existing Support Vector Regression and Random Forest models. Additionally, the integration of sentiment analysis from financial news sources leads to a 15% increase in trend directionality hits. FIG.1

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