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Predictive Analytics for Stock Market Investment Using Advanced Large Language Models (LLMS) in Finance

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Abstract: *The goal of investors seeking buy and sell guidance from brokers and specialists is to increase their earnings. Mistakes are common when trying to predict the share price by brokers or software. This paper focuses on stock market prediction based on the historical stock data of Apple Inc., which consists of Open, High, Low, Adjusted Close, and Volume. Extensive preprocessing such as missing values, non-trading day removal, normalization and feature selection. The best results were obtained by BERT (R 2 = 99.73, RMSE =0.00756), and RoBERTa (R 2 = 99.25, RMSE = 0.01246). Findings reveal that the model that is based on transformer models has much higher performance than classic deep learning strategies, including LSTM, GRU, and PSO-LSTM, used to make reliable stock market predictions.*

Keywords: Stock Market Prediction, Time-Series Forecasting, Transformer Models, Feature Selection, Financial Data Analysis