# Algorithmic Trading Bot Using Machine Learning

## Abstract

The technical indicators are highly uncertain, therefore possess greater influence on stock market prediction. Among different techniques developed for effective prediction of the financial market, the AI techniques show better prediction efficiency. In this paper, a hybrid model combined with autoencoder (AE) and kernel extreme learning machine (KELM) is proposed for further improvement in the quality of financial market prediction. This study mainly emphasizes on a precise prediction of the financial market. The main motive behind stock price prediction is minimizing the substantial losses faced by investors and analyzing the profitability with the help of buying and selling amount. The prime advantage of the proposed technique over the conventional SAE is robust prediction of different financial markets with reduction in error. To authenticate the performance of the proposed deep learning (DL) technique (KELM-AE), high-frequency data of different financial markets like Yes Bank, SBI, ASHR, and DJI are taken into consideration, and the performance of the proposed technique is investigated in Python-based simulation in accordance with MAPE (Mean Absolute Percentage Error), MAE (Mean Absolute Error), and RMSE (Root Mean Square Error). The application of SAE is new in the field of predicting different bank data. The validation of the model is performed by comparing it with other traditional methods based on different performance indexes.

## Future Work

The proposed KELM-AE model demonstrates superior performance compared to traditional methods, delivering improved prediction accuracy with minimal error. Building upon this success, the next step involves fine-tuning the model and deploying it using an API key for live trading in a paper trading environment. This deployment will allow for testing the model’s performance in real-world scenarios while ensuring the risk-free assessment of its predictions.  
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Additionally, the focus will be on evaluating the model’s effectiveness for various types of shares, particularly examining its performance on more volatile stocks. Insights into the model’s limitations and the underlying causes of any inaccuracies will guide further enhancements. Addressing these challenges and identifying the factors affecting its performance will be pivotal in refining the model to achieve better results and broader applicability in financial market predictions.