**SYNOPSIS**

Project Team No:

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**Project Title:** An efficient hybrid approach for forecasting real-time stock market indices

**Name of the Guide:** Dr. PLK Priyadarsini, AP-III, SOC

**Abstract**

Amid the dynamic and unpredictable behavior of global stock markets, this project develops a hybrid bidirectional LSTM (H.BLSTM) framework tailored for real-time forecasting of index prices. By fusing deep sequential modeling with multivariate time series inputs and technical indicators, the model captures both forward and backward temporal dependencies. It effectively addresses non-linearity, data noise, and computational constraints typical in high-frequency financial data. Validated across nine international indices, the system delivers an average MAPE of 0.001 with sub-2-second latency, significantly outperforming conventional deep learning models and offering a scalable solution for real-time financial forecasting and automated trading.

**Specific Contribution**

* Implemented data pre-processing, KNN(K-nearest-neighbours) ,Multivariate for LSTM , Model evaluation and Model visualization.

**Specific Learning**

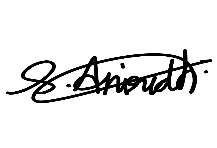
Gained practical experience in time series forecasting using a hybrid LSTM model.

Understood the importance of data preprocessing, feature extraction, and handling non-linear, non-stationary time series.

**Technical Limitations & Ethical Challenges faced**

* Encountered challenges with Parameter sensitivity on LSTM performance heavily depends on hyperparameter tuning, which can be time-consuming and dataset-specific.
* Then model preprocessing was also a major problem for Multivariate LSTM.

**Keywords:** *Stock Market Forecasting, Long Short-Term Memory (LSTM), Time Series Prediction, Financial Time Series, RMSE, MAE.*



Anirudh Sooriyamoorthy Signature of Guide

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