Predictive Modelling and Behavioural Analysis of the Indian Stock Market

THESIS

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CERTIFICATE

This is to certify that the dissertation entitled **"Predictive Modelling and Behavioural Analysis of the Indian Stock Market"** is an authentic record of dissertation writing done by **Mr. Deepak Kumar Sahu** a student of M. Tech. (Information Technology), 4th Semester, Department of Information Technology of the university.

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ABSTRACT

Stock Market has become a backbone of the global financial system, with a massive impact on economies all over the world. Due to the increasing market capitalization, stock trading has become popular among investors and thus for researchers the prediction of future stock prices. Stock market prediction is a challenging problem, taking into consideration the EMH (Efficient Market Hypothesis), nonlinearity of price movement, data diversity of non-stationary recurring time series, and optimality in parameters. There are many analysts and researchers have come up with different tools and techniques to predict movement of stock prices to help investors make better decisions.

With the view to help investors this study utilizes different stock and index datasets to conduct time series analysis including finding Indian stock market trend, investigation of stock patterns, market volatility measurement, FII DII engagement monitoring and investment potential evaluation. The research also highlights behaviour analysis of Indian stock market with various patterns. The study examines the comparative effectiveness of the traditional -based statistical method such as ARIMA along with modern machine learning methods, including LSTM network and RNN. The study is performed on the data collected in the last fourteen year i.e. 2010-2024 using Yahoo Finance and financial data from the main global indicators to investigate the prediction of the above mentioned models across the various period. This dissertation work also highlights the relationship with other instrument and behaviour of Indian stock market in major events.

This dissertation work aims to facilitate the literature on algorithmic trading strategies and provide practitioners with actionable insights for portfolio management and risk assessment in dynamic market environments.

Keywords: Deep Learning, Financial Forecasting, FII and DII, Machine Learning, Time Series Analysis.