

## **Investor oriented Stock Market Portfolio Management and Stock Prices Prediction Platform for Colombo Stock Exchange of Sri Lanka**

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Over the past few years, various studies have been conducted to develop an optimum stock market-related portfolio management platform that will assist investors to actively perform the portfolio management process. Risk and level of investor participation are considered to be challenging aspects identified for optimum portfolio management. Along with portfolio management, stock price prediction is one of the key contributing factors that help an investor to arrive at mid-and long-term strategic investment decisions. Various deep learning concepts are evaluated to determine the most accurate algorithm to implement the stock price-based prediction system. Currently, Colombo Stock Exchange (CSE) has identified a desperate requirement of a portfolio management system with prediction capabilities to support local and foreign investors to actively engage in trading activities among different stock exchanges in different countries. A critical study has been conducted using supportive research papers, similar applications developed and using various requirement elicitation techniques to determine matters such as the functional requirements, non-functional requirements, investor requirements, and UI/UX considerations. The paper further describes various technological mechanisms implemented and system architectures used to develop the portfolio management and stock price prediction system. Accordingly, the implementation of the Brownian Motion algorithm-based model and LSTM (Long Short-Term Memory) model are in detail presented by the author. Finally, evaluation and testing results of the completed system and stock price prediction models are presented to prove the successfulness of the completed application and the accuracy of the models implemented.

***Keywords-*** *stock, portfolio, prediction, LSTM, CSE*