ECONOMIC FORECASTING BASED ON BIG DATA ANALYTICS: ASIAN REGION

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I certify that I have read this thesis and that in my opinion it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Science.

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DECLARATION

This is to certify that the work is entirely my own and not of any other person, unless explicitly acknowledged (including citation of published and unpublished sources). The work has not previously been submitted in any form to the Sri Lanka Institute of Information Technology or to any other institution for assessment for any other purpose.

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ABSTRACT

Economic Forecasting Based on Big Data Analytics: Asian Region

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This paper examines the effectiveness of Long Short-Term Memory networks, a type of Recurrent Neural Network, in enhancing economic forecasts in the Asian region. Traditional forecasting methods face challenges due to the complexity and rapid changes in these markets. Analyzing data from 1960 to 2022, the study shows that Long Short-Term Memory models provide more accurate predictions of economic variables like GDP growth and inflation rates compared to basic trend analysis. The improved accuracy of Long Short-Term Memory models has significant implications for policymakers, investors, and businesses, enabling better decision-making and policy formulation. The study also contributes to the advancement of knowledge by demonstrating the potential of big data analytics in economic forecasting and suggesting future research directions that incorporate more data sources and machine learning algorithms. Policymakers are encouraged to integrate these advanced forecasting methods to meet the demands of the modern economic environment. Forecasting economic activity is very useful in the formulation of sound fiscal policies, determination of rates of interest, and control of investment. In the Asian region particularly the analytical environment and difficulty in characterizing economies and fast-changing markets are issues of concern particularly when applying classical forecasts. As part of big data analytics, this paper examines the use of Long Short-Term Memory (LSTM) a kind of Recurrent Neural Network (RNN) in enhancing the accuracy of the economic forecast. Using a sample of the period from 1960 to 2022 actual data compared with the application of LSTM models and basic trend analysis, the authors show the effectiveness of deep learning at predicting future values.

Key Words: Long Short-Term Memory, Recurrent Neural Network, Big Data, Economic Growth, Gross Domestic Product

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