

# Time Series Forecasting Based on Wavelet Decomposition and Correlation Feature Subset Selection

Ehab Ali Ahmed<sup>1</sup>, Syafiq Fauzi Bin Kamarulzaman<sup>2</sup>, Jacqueline Isabella Gisen<sup>3</sup>, Zuriani Mustaffa<sup>4</sup>

<sup>1</sup>Faculty of Computer Systems & Software Engineering, Universiti Malaysia Pahnag, 26300, Kuantan, Pahang, Malaysia

<sup>2</sup>IBM Center of excellence University Malaysia Pahang, 26300, Kuantan, Pahang, Malaysia

Corresponding author Email: ehab\_8580@yahoo.com

Received: 14 July 2017 Accepted: 20 September 2017

Due to the possibility of extracting the features of data through wavelet transformation, its use in time series forecasting model has become popular. The appropriate wavelet function selection and the level of decomposition are very necessary for a successful use of the wavelet coupled with the artificial neural network (ANN) models. This is because it can enhance the performance of the model. A drawback of the wavelet-coupled models is their used a large output number to the ANN, thereby making it more difficult to calibrate the neural structure and need a long time to train the model. This study aims to develop a wavelet-coupled ANN for the detection of the dominant input data from the wavelet decomposition sub-series for use as ANN input to increase the model accuracy with minimum input number. The result showed that the Wavelet Transformation and Correlation Feature Subset Selection (CFS) with ANN can significantly improve the efficiency of the ANN models.

**Keywords:** ANN, MLPNN, Correlation Feature Subset Selection, Wavelet Decomposition.