

UNIVERSITI TEKNOLOGI MARA

**FAULT CLASSIFICATION IN TRANSMISSION LINE
USING SINGLE LAYER FEED-FORWARD NETWORK
TRAINED BY EXTREME LEARNING MACHINE**

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Bachelor of Engineering (Hons.) Electrical

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JULY 2015

Thesis is presented in partial fulfillment for the award of the
Bachelor of Engineering (Hons.) Electrical

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DECLARATION

It is declared that all the materials in this report are the results of my own work and all materials which are not the result of my own work have been clearly acknowledged in this report.

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ACKNOWLEDGEMENT

First, praise to Allah SWT for His mercy in giving me the opportunity and encouragement to complete this thesis titled "Fault Classification in Transmission Line Using Single Layer Feed-Forward Network Trained by Extreme Learning Machine".

My first thanks to my supervisor preserved, Dr Mohammad Nizam bin Ibrahim and my co-supervisor, Dr Muhammad Khusairi bin Osman to guide their great and continuing efforts in ensuring me to complete this project since the end of last semester for a year. Besides, I would like to thank to Mr Muhammad Nizam bin Mahmud as his willing to teach me that related to this study. I have learned a lot from their profession and also give our sincere thanks to them for advise, support and valuable time.

I would also want to address my sincere thank to my father and my mother, Mr Abd Ghafar bin Baba and Pn Fawziah binti Kassim for their continuous support and prayer to me. Thanks to my entire friends who have provided me a lot of advises and moral supports in order to complete this research.

Finally, the largest award to the Universiti Teknologi MARA (UiTM) in Penang Branch provides many benefits, experiences and unforgettable memories that I could win only once in a life time as a graduate student.

Thank you all and may God bless us all.

ABSTRACT

Transmission line with fast and accurate fault classification is very important for protection and safety manner. The presence of distorted signals will cause the transmission line fail to classify definitely the fault that occurred. There are many impacts if the failure to classify fault in transmission line happen such as waste of time, high maintenance cost, and the device itself will having problem. Thus, it is important to provide a good fault classification in transmission line even though the signals are distorted by noise. This paper present a study of fault classification in transmission line with a combination of wavelet transform (WT) and single layer feed-forward network (SLFN) trained by Extreme Learning Machine (ELM) algorithm.

The WT is used to decompose the input of three-phase current signal produced by the three-phase transmission line model and extract it into desired features. In this paper, the energy and mean features are been selected. The SLFN is trained by an algorithm named Extreme Learning Machine (ELM). The extracted features will be fed up into SLFN to classify the fault.

Classification performance of SLFN is evaluated by using two types of dataset which are dataset without noise and another dataset with Signal to ratio (SNR) 30 dB. The results of this work show that fault classification using SLFN trained by ELM has high accuracy on estimating fault in transmission line system.