UNIVERSITI TEKNOLOGI MARA

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

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Date: 9th July, 2015

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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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.