

**NOVEL TECHNIQUES FOR INTELLIGENT POWER QUALITY DIAGNOSIS  
SYSTEM**

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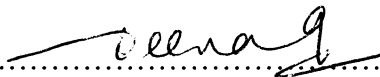
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## **Abstract**

Power Quality poses an important issue in power system industry since three decades ago. Numerous researches relating in solving the power quality disturbances have been actively undertaken by researches both in academia and industry. This project focuses on one of the many important issues, which is to classify the cause of the power quality problem. Two major disturbances are considered, voltage sag and transient which constitutes major power quality problems worldwide. Both of these problems are caused by mother nature and the equipment in power industry. The proposed technique employed in this project to classify the causes of voltage sag and transient is by using a statistical method, Support Vector Machine. A wavelet technique based on the Daubechies mother wavelet has been used as the feature extraction method. Each type of disturbances is extracted using the chosen dB mother wavelet. Sampling data are taken from the simulated IEEE 13 and 30 bus distribution data. The data are simulated using PSCAD and the SVM employed to classify the cause of each disturbance is written using Matlab script code. The results show that, the wavelet technique can be used to detect voltage sag and transient accurately. The support vector machine has been proven to be able to classify the cause of transient and voltage sag with 80% and 93% accuracy respectively.

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