CLASSIFICATION OF POWER QUALITY DISTURBANCES USING WAVELET TRANSFORM BASED ARTIFICIAL NEURAL NETWORK

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ABSTRACT

In electrical system, there are various power quality disturbances such as harmonic, voltage sag, voltage swell, and transient which may lead to power quality problems and will give adverse effects to the electrical supply performance. In this project, the wavelet transform based artificial neural network classifier is implemented under two types signal disturbances namely transient distortion and voltage sag to improve the classification process of the signal. The feature extraction is done by using wavelet transform and the details are collected and given to the neural network. The fifth order of Daubechies wavelet with the decomposition at level four is implemented in order to get optimum wavelet decomposition. The features from wavelet transform analysis will be an input to the neural network and the output will be two types of disturbances namely voltage sag and transient. The accuracy level and the advantage of integrating the wavelet transform with neural network will be discussed in this project by analyzing the performance measures such as accuracy, precision, sensitivity and confusion matrix specificity. The rate of classification is perfectly with 100% accuracy for two types of power quality disturbance signals.

TABLE OF CONTENTS

CONTENT		PAGE
APPROVAL		**iii**
DECLARATION		**iv**
ACKNOWLEDGEMENT		**v**
ABSTRACT		**vi**
TABLE OF CONTENTS		**vii**
LIST OF FIGURES		**x**
LIST OF TABLES		**xii**
LIST OF SYMBOLS AND ABBREVIATIONS		**xiii**
CHAPTER 1: INTRODUCTION		**1**
1.1	Background of Study	1
1.2	Problem Statement	3
1.3	Objective	4
1.4	Significant of Project	4
1.5	Scope of Work	4
1.6	Project Overview	4
CHAPTER 2: LITERATURE REVIEW		**6**
2.0	Introduction	6
2.1	Types of Power Quality Disturbances	6
	2.1.1 Transients	7
	2.1.2 Voltage sag	8
2.2	Types of signal processing	9
	2.2.1 Fourier Analysis	9
	2.2.2 Fast Fourier Transform	10
	2.2.3 Short-Time Fourier Transform	10

2.2.4 Multiresolution Analysis 11
2.2.5 Wavelet Analysis 11
2.3 Wavelet Transform 12
2.3.1 Introduction to Wavelet Transform 13
2.3.2 Discrete Wavelet Transform 15
2.3.3 Continuous Wavelet Transform 18
2.3.4 Daubechies Wavelet Families 19
2.4 Feature Extraction 20
2.5 Artificial Neural Network 20
2.5.1 The Biological Neural Networks 22
2.5.2 The Concepts of Multilayer Perceptron (MLP) 23
2.5.3 The Multilayer Feed Forward Network 24
2.5.4 The Levenberg Marquardt Algorithm 27
2.6 The Performance Measures 29

CHAPTER 3: METHODOLOGY **31**
3.1 Data generation 31
3.2 Feature Extraction process 31
3.3 ANN modelling 33
3.4 Overall ANN Flowchart 34
3.4.1 Load Data 35
3.4.2 Normalization of Data 36
3.4.3 Split data 36
3.4.4 Optimization of Parameters 37
3.4.5 Best Regression and Training performance 41
3.4.6 Classification process 42
3.4.7 Performance Measures 45