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NEURAL NETWORK BASED PREDICTION FOR OPTIMUM POWER SYSTEM OPERATION

A dissertation submitted to the
Department of Electrical Engineering, University of Moratuwa
in partial fulfillment of the requirement for the
Degree of Master of Science
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By

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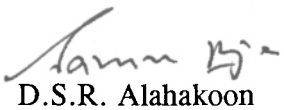
DECLARATION

The work submitted in this dissertation is the result of my own investigation, except where otherwise stated.

It has not already been accepted for any degree, and is also not being concurrently submitted for any other degree.



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I endorse the declaration by the candidate.

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Dr. Lanka Udawatta

CONTENTS

Declaration i

Abstract iv

Acknowledgement v

List of Figures vi

List of Tables vii

Attachments vii

1 Introduction to the working environment 1
1.1 Background 1
1.2 Present status of the Electrical Power Sector 2
1.3 Generation 3
1.3.1 Mahaweli Complex 3
1.3.2 Laxapana Complex 4
1.3.3 Other Hydro 5
1.3.4 Thermal Plants-CEB 5
1.3.5 Thermal Plants-IPP 6
1.4 Loads 6
1.5 Goal 7

2 Problem Identification 8
2.1 Properties of the load curve 8
2.1.1 Introduction 8
2.1.2 Load factor 8
2.2 Leading Methods for Forecasting Demand 9
2.2.1 Time Series Analysis 10
2.2.2 Regression-based Approaches 10
2.2.3 Spline or Piecewise Regression 11
2.2.4 Similar Day Lookup 11
2.2.5 Artificial Neural Networks 11
2.2.5.1 Introduction 11
2.2.5.2 Human Neurones to Artificial Neurones 14
2.2.5.3 A simple neuron 14
2.2.5.4 Neural networks in load forecasting 18
2.2.5.5 Multi-Layer Perceptron network (MLP) 19
2.2.5.5.1 Description of the network 19
2.2.5.5.2 Learning 20

3 Development of the Software model 21
3.1 Program structure 21
3.2 Half hour forecasting 21
3.2.1 Input variables 21
3.2.2 Architecture 22
3.2.3 Algorithm 23
3.2.4 Training 24
3.2.5 Application 24
3.2.6 Accuracy improvement 25
3.3 24 hour forecasting 26
3.3.1 Input variables 26
3.3.2 Variation of temperature, Humidity & Electrical energy 27
3.3.3 Selection of Architecture 29
3.3.4 Application 33
3.3.4.1 Comparison after few months 33

3.3.4.2 Load curve for deferent scenarios 35
3.3.4.3 Special day forecasting 43
3.3.5 Test results 44
3.3.6 Error messages 45

4 Economic dispatch 46
4.1 Objective 46
4.2 Background 46
4.3 Unit cost 47
4.3.1 Thermal plants 47
4.3.2 Hydro plants 47
4.4 Generation Models 47
4.4.1 Introduction 47
4.4.2 Formulation of the LaGrangian 48
4.4.3 KKT Conditions for a 2-unit system 49
4.4.4 Graphical representation of Economic Dispatching 49
4.4.5 The Lamda-iteration procedure 50
4.5 Application 51
4.5.1 Machine availability 51
4.5.2 Operational policy 51
4.5.3 Comparison of real & ECD 52
4.5.4 Comparison of the combination of Load prediction and ECD 55

5 Discussion, Conclusions & Future improvements 59
5.1 Discussion and Conclusion 59
5.2 Future improvements 60

6 References 62

7 Appendices 63

Abstract

Neural network techniques are widely use for Load forecasting and accuracy depends on the No. of past data, Network structure & influencing factors to Electricity demand, such as Day of the week, Month of the year (reflect whether, sun rise/set times – monthly cyclic patterns), Temperature, Humidity, Wind, Public Holidays etc. Western province of Sri Lanka consumes major part of Electricity generation, than other areas. So any whether pattern change in other areas would not be affected to the demand pattern considerably. But night peak this is not true.

By examining the past load curve patterns, it is revealed that the major influencing factors are time of the day, Day No., Month No., Public Holiday status & School day or not others are minor factors. But however temperature & Humidity also contribute to some extent, so these two factors also considered. Running pattern of Mini-Hydro plants has not been monitoring by the System control Centre, Therefore the loading pattern of those plants is not considered. But it is understood that the running pattern depends on the rain fall of particular area. These all plants are run of river plants, so during rainy season almost all plants runs their full capacity (around 80MW).

The main idea of this exercise is to develop a fairly accurate method of load forecasting by using Neural networks and prepare an Economic dispatch schedule at any given time, which is very useful for day to day power system operations.

Neural network tool box functions & graphical user interface in MATHLAB version 6.5 is used to develop the neural network and to prepare the Machine dispatch schedule.

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LIST OF FIGURES

Figure	Description	Page
Fig. 1-1	Gross generation-2005	2
Fig. 1-2	Electricity Consumption – 2005	2
Fig. 1-3	Consumption by category-2005	3
Fig. 1-4	Mahaweli Complex	3
Fig. 1-5	Laxapana Complex	4
Fig. 2-1	Typical load curve	8
Fig. 2-2	Load curve with energy mix	9
Fig. 2-3	Biological neural network system	11
Fig. 2-4	The neuron model	14
Fig. 2-5	A simple neuron	15
Fig. 2-6	neural model	16
Fig. 2-7	A Simple network	18
Fig. 2-8	working principle of neural network	19
Fig. 2-9	A neural network for 24hr prediction	20
Fig. 3-1	Performance training curve	24
Fig. 3-2	Comparing the actual & predicted on 13/02/06	25
Fig. 3-3	Comparing of deferent averaging methods	26
Fig. 3-4	Temperature variation in year - 2005	27
Fig. 3-5	Relative Humidity variation in the year – 2005	28
Fig. 3-6	Electrical Energy variation in the year - 2005	28
Fig. 3-7	Variation of average temperature in year 2005	29
Fig. 3-8	Variation of average relative humidity in year 2005	29
Fig. 3-9	Comparison the architecture 12:6:6:48	30
Fig. 3-10	Comparison the architecture 240:96:96:48	31
Fig. 3-11	Comparison the architecture 480:96:96:48	31
Fig. 3-12	Overall Comparison	32
Fig. 3-13	Error Comparison	33
Fig. 3-14	Comparing after few months	34
Fig. 3-15	Percentage error for 24hours	34
Fig. 3-16	Demand curve for a Week day	35
Fig. 3-17	Demand curve for a Week end	36
Fig. 3-18	Demand curve for the temperature of 31deg.	37
Fig. 3-19	Demand curve for the temperature of 26deg.	37
Fig. 3-20	Demand curve for the Humidity of 90%	38
Fig. 3-21	Demand curve for the Humidity of 80%	39
Fig. 3-22	Demand curve for Month No.8	40
Fig. 3-23	Demand curve for Month No.1	40
Fig. 3-24	Demand curve for a Week Day	41
Fig. 3-25	Demand curve for a Saturday	42
Fig. 3-26	Demand curve for one year ahead	43
Fig. 4-1	Graphical Solution of EDC	50
Fig. 4-2	Availability form	51
Fig. 4-3	A typical dispatch schedule	52
Fig. 4-4	Actual ECD	52
Fig. 4-5	Calculated ECD	53
Fig. 4-6	Actual ECD	53
Fig. 4-7	Calculated ECD	54
Fig. 4-8	Availability schedule	55
Fig. 4-9	Predicted load curve	56
Fig. 4-10	Comparison of Actual & Predicted load curve	56
Fig. 4-11	Day minimum condition (Dispatch schedule)	57
Fig. 4-12	Day peak condition (Dispatch schedule)	57
Fig. 4-13	Night peak condition (Dispatch schedule)	58
Fig. 5-1	Long term neural network	61

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LIST OF TABLES

Table	Description	Page
Table 1-1 :	Install capacity of Mahaweli Complex	4
Table 1-2 :	Installed capacity of Laxapana Complex	5
Table 1-3 :	Reservoir capacities of the system	5
Table 1-4 :	CEB Thermal plants	6
Table 1-5 :	IPP Thermal plants	6
Table 3-1 :	Comparison of different networks	23
Table 3-2 :	Performance of deferent architectures	26

ATTACHMENTS

ANNEXTURE-1.1 : Grid substation capacities and peak loads for May-2006

ANNEXTURE-1.2 : Transmission network

ANNEXTURE-3.1: Percentage error for half an hour prediction for the day 12/02/06.

ANNEXTURE-5.1: MATLAB coding

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