

---

# CONTENTS

<b>APPROVAL</b>	<b>ii</b>
<b>SELF DECLARATION AGAINST PLAGIARISM</b>	<b>iii</b>
<b>ABSTRACT</b>	<b>iv</b>
<b>ABSTRAK</b>	<b>v</b>
<b>DEDICATION</b>	<b>vi</b>
<b>ACKNOWLEDGMENTS</b>	<b>vii</b>
<b>PREFACE</b>	<b>viii</b>
<b>CONTENTS</b>	<b>ix</b>
<b>LIST OF TABLES</b>	<b>xi</b>
<b>LIST OF FIGURES</b>	<b>xiii</b>
<b>LIST OF TERMS</b>	<b>xv</b>
<b>LIST OF NOTATIONS</b>	<b>xvi</b>
<b>1 INTRODUCTION</b>	<b>1</b>
1.1 Rationale . . . . .	1
1.2 Statement of the Problem . . . . .	3
1.3 Objective and Hypotheses . . . . .	4
1.3.1 Objective . . . . .	4
1.3.2 Hypothesis . . . . .	4
1.4 Assumption . . . . .	4
1.5 Scope and Delimitation . . . . .	5
1.6 Significance of the Study . . . . .	5
<b>2 REVIEW OF LITERATURE AND STUDIES</b>	<b>6</b>
2.1 Electricity Load Forecasting . . . . .	6
2.2 Convolutional Neural Network (CNN) . . . . .	7
2.3 Attention Mechanism . . . . .	9
2.4 Empirical Mode Decomposition . . . . .	10
2.5 Performance Evaluation . . . . .	12

<b>3</b>	<b>RESEARCH METHODOLOGY</b>	<b>13</b>
3.1	Electricity Load Data . . . . .	14
3.2	Weather Data . . . . .	16
3.3	Exploratory Data Analysis (EDA) . . . . .	16
3.4	Feature Selection . . . . .	18
3.5	Feature Extraction . . . . .	19
3.6	Data Splitting . . . . .	21
3.7	Hyperparameter Tuning . . . . .	22
<b>4</b>	<b>RESULT AND DISCUSSION</b>	<b>23</b>
4.1	Electricity Forecasting using CNN . . . . .	23
4.2	Electricity Forecasting using CNN with Attention Mechanism . . . . .	25
4.3	Electricity Forecasting using CNN with Attention Mechanism and EMD . . . . .	27
4.4	Comprehensive Analysis of Models Performance . . . . .	30
<b>5</b>	<b>CONCLUSION AND RECOMMENDATIONS</b>	<b>32</b>
5.1	Conclusions . . . . .	32
5.2	Recommendations . . . . .	33
	<b>BIBLIOGRAPHY</b>	<b>34</b>
	<b>Appendices</b>	<b>38</b>
<b>A</b>	<b>RESULT EXPERIMENT</b>	<b>40</b>
A.1	CNN Model . . . . .	40
A.2	CNN with Attention Mechanism . . . . .	43
A.3	CNN with Attention Mechanism and EMD . . . . .	46
<b>B</b>	<b>Curriculum Vitae</b>	<b>52</b>