
CONTENTS

APPROVAL	ii
SELF DECLARATION AGAINST PLAGIARISM	iii
ABSTRACT	iv
ABSTRAK	v
DEDICATION	vi
ACKNOWLEDGMENTS	vii
PREFACE	viii
CONTENTS	ix
LIST OF TABLES	xi
LIST OF FIGURES	xii
LIST OF TERMS	xiii
LIST OF NOTATIONS	xiv
1 INTRODUCTION	1
1.1 Rationale	1
1.2 Statement of the Problem	3
1.3 Objective and Hypotheses	3
1.3.1 Objective	3
1.3.2 Hypotheses	4
1.4 Assumption	4
1.5 Scope and Delimitation	5
1.6 Significance of the Study	5
2 REVIEW OF LITERATURE AND STUDIES	6
2.1 Electricity load forecasting	6
2.2 Bidirectional Long Short-Term Memory (BiLSTM)	7
2.3 Signal Decomposition using EEMD	8
2.4 Spatial correlation	9
2.5 Principal Component Analysis (PCA)	11
2.6 Correlation Coefficient (CC)	12

3 RESEARCH METHODOLOGY	14
3.1 Electricity Load Data	16
3.2 Weather Data	16
3.3 Spatial Correlation	18
3.4 Feature Selection	18
3.4.1 Time Features	18
3.4.2 Weather Features Using CC	19
3.5 Feature Extraction	20
3.5.1 Signal Decomposition: EEMD	20
3.5.2 Weather Features: PCA	22
3.6 Data Splitting	23
3.7 Machine Learning Model	23
3.8 Hyperparameter Tuning	24
3.9 Evaluation of the electricity forecasting	24
4 RESULT AND DISCUSSION	26
4.1 Performance Evaluation Based on Weather Feature Selection	26
4.2 IMF Selection and Performance Analysis	27
4.3 Comparative Analysis of Forecasting Models	27
4.4 Discussion	28
5 CONCLUSION	32
BIBLIOGRAPHY	33
Appendices	37
A Miscellaneous	39
B Curriculum Vitae	40