
CONTENTS

APPROVAL	ii
SELF DECLARATION AGAINST PLAGIARISM	iii
ABSTRACT	iv
ABSTRAK	v
DEDICATION	vi
ACKNOWLEDGMENTS	vii
PREFACE	viii
CONTENTS	ix
LIST OF TABLES	xii
LIST OF FIGURES	xiii
LIST OF TERMS	xiv
LIST OF NOTATIONS	xv
1 INTRODUCTION	1
1.1 Rationale	1
1.2 Statement of the Problem	2
1.3 Objective and Hypotheses	2
1.3.1 Objective	2
1.3.2 Hypotheses	3
1.4 Scope and Delimitation	3
1.5 Significance of the Study	3
2 REVIEW OF LITERATURE AND STUDIES	5
2.1 Automated Short Answer Scoring	5
2.2 Automated Short Answer Scoring for Indonesian Essays	7
2.3 Word Embedding	8
2.3.1 Word2Vec	9
2.3.2 Glove	10
2.3.3 Fasttext	13
2.4 Sentence Embedding	15

2.4.1	Skip-Thought	16
2.4.2	Infersent	17
2.4.3	Sentence Transformer	17
2.5	Semantic Analysis	21
2.6	Similarity	21
2.7	Testing and Evaluation	23
2.8	Evaluation Methods	24
3	RESEARCH METHODOLOGY	27
3.1	Research Design	27
3.1.1	Data	28
3.1.2	Preprocessing	30
3.1.3	Embedding Proses	31
3.1.4	Similarity	38
3.1.5	Score	38
3.1.6	Evaluation	38
3.2	Eksperimen Scenario	39
3.2.1	Eksperimen 1	39
3.2.2	Eksperimen 2	39
3.3	Tools for Data Analysis	40
3.3.1	Programming Language	41
3.3.2	Library dan Framework	41
4	Analysis of the Experiment Results	42
4.1	Analysis	42
4.1.1	Eksperimen 1	42
4.1.2	Eksperimen 2	44
4.2	Summary of Findings	55
5	CONCLUSION AND RECOMMENDATIONS	56
5.1	Conclusions	56
5.2	Recommendations	56
	BIBLIOGRAPHY	57
	Appendices	63
A.	LoA	63
B.	Training epoch experiment	64
C.	Result of Training Word Embedding and Sentence Embedding	64
D.	Comparison of Scores between Teachers and Embedding Models based on Student Name	65

- E. Comparison of Scores based question number 66
- F. Question and Key Answer from Teacher 66
- G. Web Integrated in Assesment 68
 - G.1 Interface teacher 68
 - G.2 Interface Student 70
 - G.3 Eksperimen Implementation in School 71
- H. Research introduction letter from the university 74
- I. Letter of Completion of Research 75

- A Curriculum Vitae 76**