

TABLE OF CONTENTS

APPROVAL PAGE	ii
TABLE OF CONTENTS	iii
TABLE OF FIGURES	vi
TABLE OF TABLES	viii
TABLE OF EQUATIONS	ix
ABSTRACT	x
CHAPTER I: INTRODUCTION	1
1. 1 Research Background	1
1. 2 Research Problem	3
1. 3 Research Scope	3
1. 4 Research Objective	4
1. 5 Research Advantage	4
1. 6 Research Methodology	4
1. 6.1 Literature Review	4
1. 6.2 Gathering Requirements	4
1. 6.3 Implementation	5
1. 6.4 Testing	5
1. 6.5 Evaluation	5
1. 6.6 Thesis Organization	6
CHAPTER II: LITERATURE REVIEW	7
CHAPTER III: THEORETICAL BASIS	13
3. 1 Data Mining	13
3. 2 Sentiment Analysis	14
3. 3 Preprocessing	15
3. 3. 1 Data Cleaning	16
3. 3. 2 Tokenization	16

3. 3. 3 Stop Word Removal	16
3. 3. 4 Stemming	17
3. 4 Feature Extraction	18
3. 4. 1 TF-IDF	19
3. 4. 2 Bag of Words	19
3. 4. 3 Word2Vec	20
3. 5 Classification	21
3. 5. 1 Naive Bayes Classification	21
3. 5. 2 Confusion Matrix	25
CHAPTER IV: ANALYSIS AND DESIGN	26
4. 1 Research description	26
4. 2 Research Workflow	26
4. 3 Data Acquisition	28
4. 4 Dataset Analysis	29
4. 5 Preprocessing	29
4. 5. 1 Tokenization	30
4. 5. 2 Stop Word Removal	31
4. 5. 3 Stemming	31
4. 6 Feature Extraction	34
4. 6. 1 TF-IDF	34
4. 6. 2 Word of Bags	35
4. 6. 3 Word2Vec	36
4. 7 Naive Bayes	36
4. 8 Implementation	40
4. 9 Evaluation	40
CHAPTER V: IMPLEMENTATION	43
5. 1 Implementation of Data Acquisition	43
5. 2 Implementation of Preprocessing	43
5. 2. 1 Case Folding	43
5. 2. 2 Tokenization	44
5. 2. 3 Stop Word Removal	45

5. 2. 4 Stemming	46
5. 3 Implementation of Feature Extractions	47
5. 3. 1 TF-IDF on Naïve Bayes	47
5. 3. 2 Bag of Word on Naïve Bayes	48
5. 3. 3 Word2Vec on Naïve Bayes	49
5. 4 Evaluation	53
CHAPTER VI: RESULTS AND DISCUSSION	54
6. 1 Result of Preprocessing	54
6. 2 Evaluation Result	55
6. 2.1 TF-IDF on Naïve Bayes	55
6. 2.2 Bag of Words on Naïve Bayes	56
6. 2.3 Word2Vec on Naïve Bayes	56
6. 3 Feature Extraction Comparison	57
6. 4 Previous Work Comparison	58
CHAPTER VII: CONCLUSIONS AND FUTURE WORK	59
7. 1 Conclusions	59
7. 2 Future Work	59
REFERENCES	60