

TABLE OF CONTENTS

| | |
|---|---|
| <i>APPROVAL PAGE</i> | 2 |
| <i>SELF DECLARATION AGAINST PLAGIARISM</i> | 3 |
| <i>ABSTRACT</i> | 4 |
| <i>ABSTRAK</i> | 5 |
| <i>DEDICATION</i> | 6 |
| <i>ACKNOWLEDGMENTS</i> | 7 |
| <i>TABLE OF CONTENTS</i> | 8 |
| <i>LIST OF TABLES</i> | 10 |
| <i>LIST OF FIGURES</i> | 11 |
| <i>CHAPTER 1</i> | <i>INTRODUCTION</i> 2 |
| 1.1 Rationale | 2 |
| 1.2 Statement of the Problem | 4 |
| 1.3 Objective and Hypothesis | 5 |
| 1.4 Scope and Delimitation | 6 |
| 1.5 Importance of the Study | 6 |
| <i>CHAPTER 2</i> | <i>REVIEW OF</i> |
| <i>LITERATURE AND STUDIES</i> | 7 |
| 2.1. Related Literature | 7 |
| 2.1.1. Aspect Based Sentiment Analysis..... | 7 |
| 2.1.2. Aspect Based Sentiment Analysis with Deep Learning | 8 |
| 2.1.3. Aspect Based Sentiment Analyst for Beauty Product | 11 |
| 2.1.4. Utilization of Large Pre Trained Language Model IndoBERT for ABSA..... | 12 |
| 2.1.5. Embedding Layer From Tensorflow for ABSA..... | 13 |
| <i>CHAPTER 3</i> | 14 |
| <i>RESEARCH METHODOLOGY</i> | 14 |
| 3.1. Labeling Data | 14 |
| 3.2. Pre-processing | 16 |
| 3.3. Word Embedding | 18 |
| a. Embedding Layer From Tensorflow | Error! Bookmark not defined. |
| b. IndoBert..... | 19 |
| 3.4. Split Data | 21 |
| 3.5. Model Formation | 21 |
| 3.5.1. Convolutional Neural Network (CNN) Method..... | 22 |

| | | |
|--|--|-----------|
| 3.5.2. | Long Short Term Memory (LSTM) Method..... | 23 |
| 3.5.3. | CNN - LSTM Method..... | 25 |
| 3.6. | Evaluation..... | 27 |
| <i>PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA.....</i> | | 29 |
| 4.1. | Result of Experiments..... | 29 |
| 4.1.1. | Hyperparameter Result | 30 |
| 4.1.2. | Hyperparameter Analysis..... | 33 |
| 4.1.3. | Word Embedding Analysis | 35 |
| 4.1.4. | Sentiment Classification Performance Analysis Based on Aspects | 37 |
| 4.1.5. | Discussion Others | 40 |
| <i>CHAPTER 5</i> | | 44 |
| <i>CONCLUSION AND RECOMMENDATIONS.....</i> | | 44 |
| 5.1. | Conclusion | 44 |
| 5.2. | Recommendations..... | 46 |
| <i>REFERENCES</i> | | 47 |
| <i>CURRICULUM VITAE.....</i> | | 51 |
| <i>Lampiran</i> | | 52 |
| 1. | CNN-LSTM Model Eksperiment | 52 |
| 2. | Experiment of CNN-LSTM Model with IndoBert | 54 |