

**Contents**

APPROVAL SIGNATURE ..... i

STATEMENT SHEET ..... ii

**1. Introduction** ..... 1

**1.1 Background** ..... 1

**1.2 Problem Identification** ..... 1

**1.3 Research Objectives** ..... 2

**1.4 Organization of Writing** ..... 2

**2. Literature Review** ..... 2

**2.1 Fake Review Detection** ..... 2

**2.2 Fake Review Detection using Graph** ..... 2

**2.3 Fake Review Detection using Graph Convolutional Network** ..... 2

**3. System Design** ..... 2

**3.1 Data Collection** ..... 3

**3.2 Data Labeling** ..... 3

**3.3 Pre-Processing Data** ..... 3

**3.4 Representation Text to Graph** ..... 4

**3.4.1 TF-IDF** ..... 4

**3.4.2 Pointwise Mutual Information** ..... 4

**3.5 Graph Convolutional Network** ..... 5

**4. Evaluation** ..... 6

**4.1 Test Result** ..... 6

**4.1.1 Evaluation with balanced data** ..... 6

**4.1.2 Evaluation with unbalanced data** ..... 8

**4.2 Analysis of Test Results** ..... 8

**4.2.1 Word or sentence identification** ..... 8

**4.2.2 Word relationships in fake sentences** ..... 9

**5. Conclusion** ..... 9

**6. Future Work** ..... 10

**References** ..... 10

**Images of List**

Figure 1: System Design ..... 3

Figure 2: Pre-Processing Steps ..... 4

Figure 3: Illustration of Edges TF-IDF ..... 5

Figure 4: Illustration of Edges PMI ..... 5

Figure 5: Illustration of a Graph Convolutional Network (GCN) ..... 6

Figure 6: Nodes in Graph G: Left displays all nodes, right zooms in on nodes with their respective labels. .... 7

Figure 7: Node with Edges on Graph G ..... 7

**Table of List**

Table 1: Data Labeling ..... 3

Table 2: Model evaluation results on graph convolutional network ..... 7

Table 3: Model evaluation result unbalanced data ..... 8

Table 4: Red and Blue Nodes with Their Original and Predicted Labels ..... 8

Table 5: Red node with highest logit ..... 9

Table 6: Result of a Red Node with the word “Banget” in it ..... 9