

YOUR THESIS TITLE HERE

YOUR NAME HERE

YOUR DEGREE

YOUR FACULTY  
UNIVERSITI TUNKU ABDUL RAHMAN  
MONTH YEAR

**YOUR THESIS TITLE HERE**

By

**YOUR NAME HERE**

A thesis submitted to the  
Department of Your Department,  
Your Faculty,  
Universiti Tunku Abdul Rahman,  
in partial fulfillment of the requirements for the degree of  
Your Degree  
Month Year

## **ABSTRACT**

### **YOUR THESIS TITLE HERE**

Your abstract content here. This should provide a comprehensive summary of your thesis, including the main contributions, methodologies, and findings.

## ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to my supervisors for their invaluable guidance, insightful advice, and continuous support throughout my research. I am also sincerely grateful to Universiti Tunku Abdul Rahman for providing the funding, resources, and opportunities that were essential in completing this study.

[Your additional acknowledgments content here. Express gratitude to collaborators, family, and anyone else who supported your research.]

**Template Acknowledgement:** This thesis was prepared using a template originally developed by Tan Jing Jie. The template is available at: <https://github.com/jingjie00/utartemplate>

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Approved by:

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Supervisor  
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Your Faculty,  
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Date: 25 October 2025

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(Co-Supervisor Name)  
Co-Supervisor  
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Date: 25 October 2025

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Co-Supervisor  
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Date: 25 October 2025

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Your truly,

---

(YOUR NAME)

## **DECLARATION**

I hereby declare that the dissertation is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Tunku Abdul Rahman or other institutions.

---

(YOUR NAME)

Date: 25 October 2025

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## **LIST OF ABBREVIATIONS**

<b>AI</b>	Artificial Intelligence
<b>ML</b>	Machine Learning
<b>NLP</b>	Natural Language Processing



# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 Preface**

Your content here. This section introduces the research topic and provides context for the study ([Author and Author, 2024](#)).

### **1.2 Research Background**

Your content here

### **1.3 Problem Statement**

Your content here

1. Problem statement item 1
2. Problem statement item 2
3. Problem statement item 3
4. Problem statement item 4
5. Problem statement item 5

## **1.4 Objectives**

Your content here

1. Objective 1
2. Objective 2
3. Objective 3
4. Objective 4
5. Objective 5

## **1.5 Significance of Research**

Your content here

## **1.6 Thesis Outline**

Your content here

The **5 core research works (RWs)** presented in this thesis include:

**RW1** Research Work 1 Title  
(Chapter [3](#), Abbreviation)

**RW2** Research Work 2 Title  
(Chapter [4](#), Abbreviation)

**RW3** Research Work 3 Title  
(Chapter [5](#), Abbreviation)

**RW4** Research Work 4 Title  
(Chapter [6](#), Abbreviation)

**RW5** Research Work 5 Title  
(Chapter [7](#), Abbreviation)

## **1.7 Epilogue**

Your content here

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Preface**

Your content here. This section reviews relevant literature and theoretical frameworks ([Author, 2022](#); [Smith and Doe, 2020](#)).

#### **2.2 Theoretical Framework**

Your content here. The theoretical framework is based on established models [Jones \(2021\)](#).

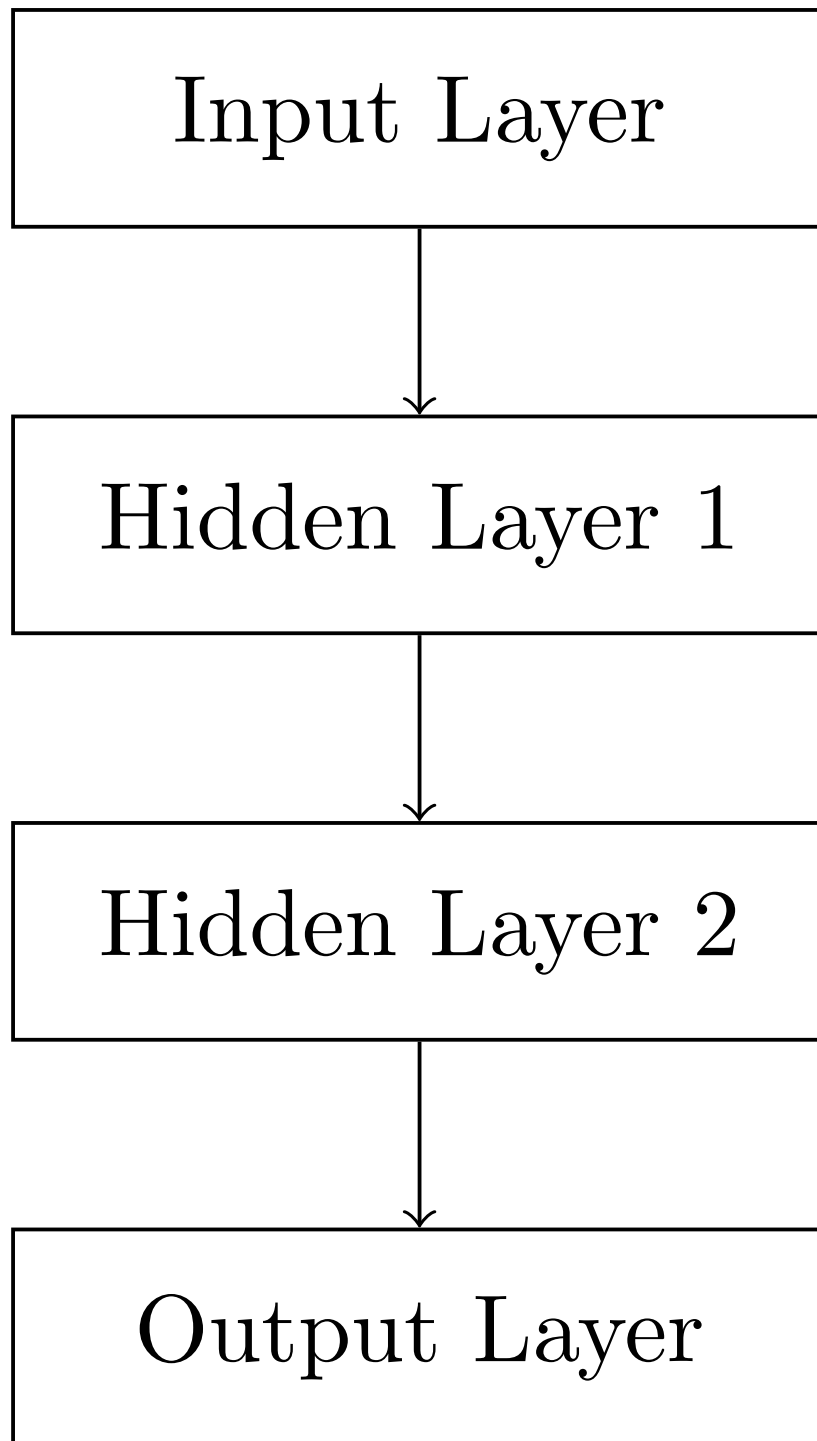


Figure 2.1: Example figure: Neural Network architecture

### 2.2.1 a

Your content here

### **2.2.2 b**

Your content here

### **2.2.3 c**

Your content here

## **2.3 Theoretical Models**

Your content here

### **2.3.1 a**

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Table 2.1: Your caption here

<b>Column 1</b>	<b>Column 2</b>
Data	Data

### **2.3.2 b**

Your content here

Table 2.2: Your caption here

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### **2.3.3 c**

Your content here

Table 2.3: Your caption here

Table content placeholder
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### **2.3.4 d**

Your content here

Table 2.4: Your caption here

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## **2.4 Datasets and Corpora**

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Table 2.5: Your caption here

Column headers	
Table content placeholder	

## 2.5 Machine Learning Techniques

Your content here

### 2.5.1 a

Your content here

Table 2.6: Your caption here

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### 2.5.2 b

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Table 2.7: Your caption here

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### 2.5.3 c

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Table 2.8: Your caption here

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Table 2.9: Your caption here

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### 2.5.4 d

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### **2.5.5 e**

Your content here

PLACEHOLDER: Figure showing neural network architecture

Figure 2.2: Your caption here

PLACEHOLDER: Figure showing RNN architecture

Figure 2.3: Your caption here

PLACEHOLDER: Figure showing LSTM architecture

Figure 2.4: Your caption here

PLACEHOLDER: Figure showing Transformer architecture

Figure 2.5: Your caption here

## **2.6 Class Imbalance Mitigation Techniques**

Your content here

## **2.7 Large Language Models (LLM)**

Your content here

### **2.7.1 a**

Your content here

### **2.7.2 b**

Your content here

### **2.7.3 c**

Your content here

## **2.8 Recognition Models**

Your content here

### **2.8.1 a**

Your content here

### **2.8.2 b**

Your content here

#### **2.8.2.1 a**

Your content here

#### **2.8.2.2 b**

Your content here

### **2.8.3 c**

Your content here

## **2.9 Applications**

Your content here

### **2.9.1 a**

Your content here

#### **2.9.1.1 a**

Your content here

#### **2.9.1.2 b**

Your content here

### **2.9.2 b**

Your content here

#### **2.9.2.1 a**

Your content here

#### **2.9.2.2 b**

Your content here

### **2.10 Epilogue**

Your content here

## **CHAPTER 3**

### **CHAPTER TITLE**

#### **3.1 Preface**

Your content here

The key contributions of this work are as follows:

- Contribution 1
- Contribution 2
- Contribution 3

#### **3.2 Methodologies**

Your content here

PLACEHOLDER: Figure showing methodology diagram

Figure 3.1: Your caption here



$$\textit{Yourequationhere} \tag{3.1}$$

PLACEHOLDER: Figure showing label distribution

Figure 3.2: Your caption here

PLACEHOLDER: Figure showing dataset split

Figure 3.3: Your caption here

$$\textit{Yourequationhere} \tag{3.2}$$

### **3.2.1 a**

Your content here

### **3.2.2 b**

Your content here

### **3.2.3 c**

Your content here

### **3.2.4 d**

Your content here

$$\textit{Yourequation} \tag{3.3}$$

$$\textit{Yourequation} \tag{3.4}$$

### **3.2.5 e**

Your content here

### **3.2.6 f**

Your content here

#### **3.2.6.1 a**

Your content here

$$\textit{Yourequationhere} \tag{3.5}$$

#### **3.2.6.2 b**

Your content here

$$\textit{Yourequationhere} \tag{3.6}$$

#### **3.2.6.3 c**

Your content here

$$\textit{Yourequationhere} \tag{3.7}$$

$$\textit{Yourequationhere} \tag{3.8}$$

$$\textit{Yourequationhere} \tag{3.9}$$

#### 3.2.6.4 d

Your content here

$$\textit{Your equation} \tag{3.10}$$

PLACEHOLDER: Figure showing loss visualization

Figure 3.4: Your caption here

### 3.2.7 g

Your content here

#### 3.2.7.1 a

Your content here

$$\textit{Yourequationhere} \tag{3.11}$$

#### 3.2.7.2 b

Your content here

$$\textit{Yourequationhere} \tag{3.12}$$

$$\textit{Yourequationhere} \tag{3.13}$$

#### 3.2.7.3 c

Your content here

$$\textit{Yourequationhere} \tag{3.14}$$

### 3.2.8 h

Your content here

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**Algorithm 1** Your algorithm caption

---

**Require:** Input parameters

**Ensure:** Output

1: Algorithm steps

---

### 3.3 Evaluations

#### 3.3.1 a

Your content here

*Yourequationhere* (3.15)

*Yourequationhere* (3.16)

*Yourequationhere* (3.17)

*Yourequationhere* (3.18)

*Yourequationhere* (3.19)

*Yourequationhere* (3.20)

*Yourequationhere* (3.21)

*Yourequationhere* (3.22)

*Yourequationhere* (3.23)

$$\textit{Yourequationhere} \tag{3.24}$$

### **3.3.2 b**

Your content here

$$\textit{Yourequationhere} \tag{3.25}$$

Where:

- Description 1
- Description 2

## **3.4 Results**

Your content here

### **3.4.1 a**

Your content here

PLACEHOLDER: Figure 1 PLACEHOLDER: Figure 2

(a) Dataset 1

(b) Dataset 2

Figure 3.5: Your caption here

### **3.4.2 b**

Your content here



Table 3.1: Your caption here

Table content placeholder
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Table 3.2: Your caption here

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### 3.4.3 c

Your content here

Table 3.3: Your caption here

Table content placeholder
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Table 3.4: Your caption here

Table content placeholder
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PLACEHOLDER: Figure 1    PLACEHOLDER: Figure 2

(a) Dataset 1

(b) Dataset 2

Figure 3.6: Your caption here

#### 3.4.4 d

Your content here

PLACEHOLDER: Figure 1

PLACEHOLDER: Figure 2

(a) Subfigure 1

(b) Subfigure 2

PLACEHOLDER: Figure 3

PLACEHOLDER: Figure 4

(c) Subfigure 3

(d) Subfigure 4

Figure 3.7: Your caption here

PLACEHOLDER: Figure 1 PLACEHOLDER: Figure 2

(a) Dataset 1

(b) Dataset 2

Figure 3.8: Your caption here

$$\textit{Yourequationhere} \tag{3.26}$$

$$\textit{Yourequationhere} \tag{3.27}$$

$$\textit{Yourequationhere} \tag{3.28}$$

Table 3.5: Your caption here

Table content placeholder
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### 3.5 Epilogue

Your content here

## **CHAPTER 4**

### **CHAPTER TITLE**

#### **4.1 Preface**

Your content here

1. Research Question 1
2. Research Question 2
3. Research Question 3

#### **4.2 Methodologies**

Your content here

- Contribution 1
- Contribution 2
- Contribution 3



PLACEHOLDER: Figure showing methodology diagram

Figure 4.1: Your caption here

#### **4.2.1 a**

Your content here

#### **4.2.2 b**

Your content here

##### **4.2.2.1 a**

Your content here

PLACEHOLDER: Prompt example figure

Figure 4.2: Your caption here

##### **4.2.2.2 b**

Your content here

PLACEHOLDER: Prompt example figure

Figure 4.3: Your caption here

##### **4.2.2.3 c**

Your content here

PLACEHOLDER: Prompt example figure

Figure 4.4: Your caption here

##### **4.2.2.4 d**

Your content here

PLACEHOLDER: Prompt example figure

Figure 4.5: Your caption here

#### **4.2.2.5 e**

Your content here

#### **4.2.3 c**

Your content here

### **4.3 Evaluations**

Your content here

#### **4.3.1 a**

Your content here

#### **4.3.2 b**

Your content here

#### **4.3.3 c**

Your content here

### **4.4 Results**

Your content here

#### **4.4.1 a**

Your content here

#### **4.4.2 b**

Your content here

##### **4.4.2.1 a**

Your content here

#### **4.4.2.2   b**

Your content here

#### **4.4.2.3   c**

Your content here

#### **4.4.2.4   d**

Your content here

#### **4.4.3   c**

Your content here

##### **4.4.3.1   a**

Your content here

##### **4.4.3.2   b**

Your content here

##### **4.4.3.3   c**

Your content here

##### **4.4.3.4   d**

Your content here

#### **4.4.4   d**

Your content here

PLACEHOLDER: Figure 1   PLACEHOLDER: Figure 2

(a) Subfigure 1

(b) Subfigure 2

Figure 4.6: Your caption here

PLACEHOLDER: Figure showing cost analysis

Figure 4.7: Your caption here

#### **4.4.5 e**

Your content here

### **4.5 Epilogue**

Your content here

## CHAPTER 5

### CHAPTER TITLE

#### 5.1 Preface

Your content here

1. Contribution 1
2. Contribution 2
3. Contribution 3

#### 5.2 Methodologies

Your content here

PLACEHOLDER: Figure showing JAM architecture

Figure 5.1: Your caption here

##### 5.2.1 a

Your content here

$$\textit{Yourequationhere} \tag{5.1}$$

##### 5.2.2 b

Your content here

##### 5.2.2.1 a

Your content here

$$\textit{Yourequationhere} \tag{5.2}$$

$$\textit{Yourequationhere} \tag{5.3}$$

$$\textit{Yourequationhere} \tag{5.4}$$

$$\textit{Yourequationhere} \tag{5.5}$$

#### **5.2.2.2   b**

Your content here

$$\textit{Yourequationhere} \tag{5.6}$$

PLACEHOLDER: Figure showing LAJ mechanism

Figure 5.2: Your caption here

#### **5.2.2.3   c**

Your content here

#### **5.2.3   c**

Your content here

### **5.3   Evaluations**

Your content here

#### **5.3.1   a**

Your content here

### 5.3.2 b

Your content here

## 5.4 Results

Your content here

### 5.4.1 a

Your content here

PLACEHOLDER: Figure 1 PLACEHOLDER: Figure 2

(a) Dataset 1

(b) Dataset 2

Figure 5.3: Your caption here

### 5.4.2 b

Your content here

PLACEHOLDER: Figure 1 PLACEHOLDER: Figure 2

(a) Dataset 1

(b) Dataset 2

Figure 5.4: Your caption here

PLACEHOLDER: Figure 1 PLACEHOLDER: Figure 2

(a) Subfigure 1

(b) Subfigure 2

PLACEHOLDER: Figure 3 PLACEHOLDER: Figure 4

(c) Subfigure 3

(d) Subfigure 4

Figure 5.5: Your caption here

PLACEHOLDER: Figure 1 PLACEHOLDER: Figure 2

(a) Subfigure 1

(b) Subfigure 2

PLACEHOLDER: Figure 3 PLACEHOLDER: Figure 4

(c) Subfigure 3

(d) Subfigure 4

Figure 5.6: Your caption here



## **5.5 Epilogue**

Your content here

## CHAPTER 6

### CHAPTER TITLE

#### 6.1 Preface

Your content here

- Research Question 1
- Research Question 2
- Research Question 3

#### 6.2 Methodologies

Your content here

PLACEHOLDER: Figure showing ADAM architecture

Figure 6.1: Your caption here

##### 6.2.1 a

Your content here

$$Your equation here \quad (6.1)$$

Where:

- Description 1
- Description 2

Table 6.1: Your caption here

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### **6.2.2 b**

Your content here

#### **6.2.2.1 a**

Your content here

$$\textit{Yourequationhere} \tag{6.2}$$

$$\textit{Yourequationhere} \tag{6.3}$$

$$\textit{Yourequationhere} \tag{6.4}$$

Where:

- Description 1
- Description 2
- Description 3

#### **6.2.2.2 b**

Your content here

$$\textit{Yourequationhere} \tag{6.5}$$

#### **6.2.2.3 c**

Your content here

$$\textit{Yourequationhere} \tag{6.6}$$

### **6.2.3 c**

Your content here

### 6.3 Evaluations

Your content here

#### 6.3.1 a

Your content here

#### 6.3.2 b

Your content here

### 6.4 Results

Your content here

PLACEHOLDER: Figure 1 PLACEHOLDER: Figure 2

(a) Subfigure 1

(b) Subfigure 2

PLACEHOLDER: Figure 3 PLACEHOLDER: Figure 4

(c) Subfigure 3

(d) Subfigure 4

PLACEHOLDER: Figure 5

(e) Subfigure 5

Figure 6.2: Your caption here

PLACEHOLDER: Figure 1 PLACEHOLDER: Figure 2

(a) Dataset 1

(b) Dataset 2

Figure 6.3: Your caption here

PLACEHOLDER: Figure 1 PLACEHOLDER: Figure 2

(a) Dataset 1

(b) Dataset 2

Figure 6.4: Your caption here

PLACEHOLDER: Figure 1 PLACEHOLDER: Figure 2

(a) Subfigure 1

(b) Subfigure 2

PLACEHOLDER: Figure 3 PLACEHOLDER: Figure 4

(c) Subfigure 3

(d) Subfigure 4

PLACEHOLDER: Figure 5

(e) Subfigure 5

Figure 6.5: Your caption here

PLACEHOLDER: Figure 1 PLACEHOLDER: Figure 2

(a) Subfigure 1

(b) Subfigure 2

PLACEHOLDER: Figure 3 PLACEHOLDER: Figure 4

(c) Subfigure 3

(d) Subfigure 4

PLACEHOLDER: Figure 5

(e) Subfigure 5

Figure 6.6: Your caption here

#### **6.4.1 a**

Your content here

#### **6.4.2 b**

Your content here

#### **6.4.3 c**

Your content here

### **6.5 Epilogue**

Your content here

## **CHAPTER 7**

### **CHAPTER TITLE**

#### **7.1 Preface**

Your content here

- Contribution 1
- Contribution 2
- Contribution 3

#### **7.2 Methodologies**

Your content here

PLACEHOLDER: Figure showing framework

Figure 7.1: Your caption here

##### **7.2.1 a**

Your content here

Table 7.1: Your caption here

Table content placeholder
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### **7.2.2 b**

Your content here

#### **7.2.2.1 a**

Your content here

#### **7.2.2.2 b**

Your content here

### **7.2.3 c**

Your content here

PLACEHOLDER: Figure showing feature visualization

Figure 7.2: Your caption here

## **7.3 Evaluations**

Your content here

### **7.3.1 a**

Your content here

### **7.3.2 b**

Your content here

## **7.4 Results**

Your content here

### **7.4.1 a**

Your content here

Table 7.2: Your caption here

Table content placeholder
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#### **7.4.2 b**

Your content here

Table 7.3: Your caption here

Table content placeholder
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#### **7.4.3 c**

Your content here

Table 7.4: Your caption here

Table content placeholder
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#### **7.4.4 d**

Your content here

Table 7.5: Your caption here

Table content placeholder
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### **7.5 Epilogue**

Your content here

## **CHAPTER 8**

### **CONCLUSION**

#### **8.1 Preface**

Your content here

#### **8.2 Recapitulation**

Your content here

##### **8.2.1 a**

Your content here

##### **8.2.2 b**

Your content here

##### **8.2.3 c**

Your content here

##### **8.2.4 d**

Your content here

##### **8.2.5 e**

Your content here

#### **8.3 Future Works**

Your content here

**8.3.1 a**

Your content here

**8.3.2 b**

Your content here

**8.3.3 c**

Your content here

**8.3.4 d**

Your content here

## **8.4 Epilogue**

Your content here

## REFERENCES

A. Author and B. Author. Example article title. *Journal Name*, 1:1–10, 2024.

D. Author. *Example Book Title*. Publisher Name, 2022.

Robert Jones. Deep learning techniques. In *Proceedings of the International Conference on AI*, pages 200–215, 2021.

John Smith and Jane Doe. Machine learning applications. *Journal of Computer Science*, 15(3):45–62, 2020.

## APPENDICES

### .1 Datasets

Your datasets description here

- **Dataset 1 Name**

[DatasetURL](#)

- **Dataset 2 Name**

[DatasetURL](#)

## .2 Code Repository and Resources

Your code repository description here

- **Chapter 3**  
Chapter Title:  
[RepositoryURL](#)
- **Chapter 4**  
Chapter Title:  
[RepositoryURL](#)
- **Chapter 5**  
Chapter Title:  
[RepositoryURL](#)
- **Chapter 6**  
Chapter Title:  
[RepositoryURL](#)
- **Chapter 7**  
Chapter Title:  
[RepositoryURL](#)

Each link provides access to the corresponding chapter's codebase and resources. For setup instructions and further details, please consult the README files in each repository.



### **.3 Publication**

Your publication information here

#### **Articles derived from this Degree thesis**

- Publication entry 1
- Publication entry 2

#### **Articles related to this Degree thesis**

- Publication entry 1
- Publication entry 2

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