

**CONTENTS**

APPROVAL PAGE .....	i
SELF DECLARATION AGAINST PLAGIARISM.....	ii
ABSTRACT.....	iii
PREFACE .....	iv
ACKNOWLEDGEMENT .....	v
CONTENTS.....	vii
LIST OF TABLES.....	ix
LIST OF FIGURES.....	x
LIST OF ABBREVIATIONS.....	xi
CHAPTER I : INTRODUCTION.....	1
1.1 Background .....	1
1.2 Problem Identification .....	3
1.3 Objectives .....	4
1.4 Scope of Work .....	4
1.5 Expected Results .....	5
1.6 Research Methodology .....	5
1.7 Structure of Thesis.....	5
CHAPTER II : BASIC CONCEPTS .....	7
2.1 Object Detection.....	7
2.1.1 One-Stage Detection.....	8
2.1.2 Two-Stage Detection.....	8
2.2 Image Classification .....	9
2.3 YOLOv8 .....	10
2.4 SimCLR.....	11
2.4.1 Data Augmentation .....	13
2.4.2 Base Encoder .....	13
2.4.3 Projection Head.....	14
2.5 B-CNN.....	15
2.6 VGG-16 .....	16
2.7 Dataset .....	17
CHAPTER III : SYSTEM MODEL AND METHOD.....	19
3.1 System Design.....	19

3.1.1	Detection Process .....	19
3.1.2	Classification Process.....	20
3.2	Performance Parameters .....	21
3.2.1	mean Average Precision (mAP) .....	22
3.2.2	Accuracy .....	22
3.3	System Flowchart .....	23
3.3.1	System Flowchart of the Detection Process .....	23
3.3.2	System Flowchart of the Classification Process .....	24
CHAPTER IV : EXPERIMENTAL RESULTS AND ANALYSIS .....		26
4.1	Detection Process .....	26
4.2	Classification Process.....	28
CHAPTER V : CONCLUSION .....		31
5.1	Conclusion.....	31
5.2	Future Work.....	31
REFERENCES.....		33