

CONTENTS

SELF DECLARATION AGAINST PLAGIARISM.....	i
ABSTRACT.....	ii
ACKNOWLEDGEMENTS.....	iii
PREFACE	iv
CONTENTS	v
LIST OF FIGURES	vii
LIST OF TABLES	ix
LIST OF ABBREVIATION.....	x
CHAPTER I INTRODUCTION.....	1
1.1 Background	1
1.2 Problem Identification and Objective	3
1.3 Research Objective.....	4
1.4 Scope of Work.....	4
1.5 Research Methodology.....	5
1.6 Research Timeline.....	6
1.7 Structure of the Thesis.....	6
CHAPTER II BASIC CONCEPTS	12
2.1 Rice Seed.....	12
2.2 Data Image Augmentation.....	15
2.3 Deep Learning.....	16
2.4 Convolutional Neural Network (CNN).....	18
2.3.1 Convolutional Layer.....	19
2.3.2 Rectified Linear Units (ReLU)	21
2.3.3 Pooling Layer	21
2.3.4 Flattening.....	23
2.3.5 Fully Connected Layer	23
2.3.6 Adam Optimizer	24
2.3.7 STR-Net Architecture.....	25
2.3.8 InceptionV3 Architecture	26
2.3.9 ResNet50V2 Architecture.....	27
CHAPTER III SYSTEM DESIGN	26

3.1	System Models and Scenario.....	26
3.2	Scenario of Simulation	28
3.3	System Evaluation of Classification Results	31
3.4	Scenario of Simulation	33
3.5	Scenario of Data Collection.....	34
3.6	Analysis Scenario.....	34
CHAPTER IV	36
4.1	Collect Dataset	36
4.2	Analysis with Growth the Rice Seed Dataset	36
4.2.1	Analysis Growth Day 3 with Normal Class	37
4.2.2	Analysis Growth Day 5 with Normal, Abnormal, Fresh, Dead Class	37
4.2.3	Analysis Growth Day 7 with Normal, Abnormal, Fresh, Dead Class	40
4.2.4	Analysis Growth Day 14 with Normal, Abnormal, Fresh, Dead Class	43
4.3	Analysis with Quality the Rice Seed Dataset	46
4.3.1	First Scenario Compare Batch Size	47
4.3.2	Second Scenario Compare Learning Rate	48
4.3.3	Third Scenario Compare Epoch.....	50
4.3.4	Fourth Scenario Compare Architecture	51
4.4	Analysis with Different Layer of STR-Net.....	55
4.5	Analysis with Balancing Datasets	57
CHAPTER V	64
5.1	Conclusions.....	64
5.2	Future Works.....	65
REFERENCES	66