

TABLE OF CONTENT

ABSTRACT.....	i
APPROVAL SHEET	ii
STATEMENT OF ORIGINALITY	iii
DEDICATION PAGE.....	iv
PREFACE	v
TABLE OF CONTENT	vi
LIST OF FIGURES	ix
LIST OF TABLES	xi
LIST OF SYMBOLS	xii
GLOSSARY.....	xiii
LIST OF APPENDIX	xiv
CHAPTER I INTRODUCTION.....	1
I.1 Background	1
I.2 Problem Statement	3
I.3 Research Objectives	4
I.4 Research Scopes.....	4
I.5 Research Benefits.....	4
I.6 Writing System Final Project	5
CHAPTER II LITERATURE REVIEW.....	6
II.1 Land Use and Land Cover (LULC)	6
II.2 Regional Spatial Planning (RTRW).....	7
II.3 Remote Sensing.....	7
II.4 Satellite Landsat 8	8
II.5 Satellite Landsat 9	10

II.6	Image Preprocessing	11
II.7	Satellite Image Processing	12
II.8	Cross-Industry Standard Process for Data Mining (CRISP-DM).....	13
II.9	Deep Learning.....	14
II.10	Convolutional Neural Network (CNN).....	15
II.11	U-Net.....	16
II.12	TensorFlow	17
II.13	Google Earth Engine (GEE).....	18
II.14	QGIS	18
II.15	Streamlit	19
II.16	Confusion Matrix	19
II.17	Dice Coefficient	21
II.18	Intersection over Union (IoU).....	21
II.19	Reason of Methodology Selection	22
II.20	State of the Art	26
CHAPTER III RESEARCH METHOD		29
III.1	Research Method.....	29
III.2	Systematic Problem Solving	30
III.2.1	Initial Phase.....	32
III.2.2	Business Understanding	32
III.2.3	Data Understanding.....	33
III.2.4	Data Preparation.....	34
III.2.5	Modeling	34
III.2.6	Evaluation	35
III.2.7	Deployment.....	36
III.2.8	Final Phase	36
CHAPTER IV PROBLEM SOLVING.....		37

IV.1	Business Understanding.....	37
IV.2	Data Understanding.....	38
IV.3	Data Preparation.....	40
IV.3.1	Data Cleansing	41
IV.3.2	Data Labelling.....	43
IV.3.3	Normalization.....	45
IV.3.4	Patch Extraction	46
IV.3.5	Data Augmentation	47
IV.3.6	Data Splitting	49
IV.4	Modelling	50
CHAPTER V VALIDATION, RESULT ANALYSIS AND IMPLICATIONS..		60
V.1	Validation.....	60
V.2	Deployment.....	63
V.3	Result Analysis	65
V.3.1	Confusion Matrix	66
V.3.2	Intersection over Union (IoU).....	67
V.3.3	Dice Coefficient	69
V.4	Implications of Final Project.....	70
CHAPTER VI CONCLUSION AND SUGGESTIONS.....		72
VI.1	Conclusion	72
VI.2	Suggestions	73
REFERENCES.....		75
APPENDIX.....		80