

LIST OF CONTENTS

ABSTRACT	III
LIST OF FIGURES.....	IX
GLOSSARY.....	X
LIST OF SYMBOL.....	XI
CHAPTER 1	1
INTRODUCTION	1
1.1. BACKGROUND.....	1
1.2. GAP OF THE REAL CONDITION AND THE FUTURE	2
1.3. PROBLEM DEFINITION.....	3
1.4. PROBLEM LIMITATIONS	4
1.5. RESEARCH OBJECTIVES.....	5
1.6. HYPOTHESES	6
1.7. SCOPE OF WORK	7
CHAPTER 2	8
BASIC THEORY	8
2.1. LTE (LONG TERM EVOLUTION)	8
2.2. RADIO PLANNING	8
2.2.1. COVERAGE DIMENSIONING	10
2.2.2. CAPACITY DIMENSIONING	11
2.2.3. OPTIMIZATION	12
2.3. GREY WOLF OPTIMIZER (GWO).....	14
2.3.1. ENCIRCLING THE PREY	16
2.3.2. HUNTING THE PREY.....	17
2.3.3. ATTACKING AND SEARCHING THE PREY	18
2.3.3.1. ATTACKING.....	18
2.3.3.2. SEARCHING	19
2.4. MODIFIED GWO	19
CHAPTER 3	21
BASE STATION LOCATION PLANNING OPTIMIZATION WITH MODIFIED GREY WOLF OPTIMIZER	21
3.1. GENERAL SUBSCRIPTION.....	21
3.2. CONSTRAINTS PARAMETERS.....	23
3.3. BASE STATION LOCATION OPTIMIZATION.....	24
3.4. BASE STATION REDUNDANT SUPPRESSION	32
CHAPTER 4	34
SIMULATION AND ANALYSIS.....	34
4.1. SIMULATION	34
4.2. SIMULATION RESULT.....	36
4.3. ANALYSIS.....	40
A. SCENARIO 1: SUB URBAN WITH 100 KM2 AREA, 20 USER/KM2, 8 SEARCH AGENTS , AND 500 ITERATIONS	40
B. SCENARIO 2: SUB URBAN WITH 100 KM2 AREA, 20 USER/KM2, 8 SEARCH AGENTS , AND 1000 ITERATIONS	40

C. SCENARIO 3: SUB URBAN WITH 50 KM2 AREA, 20 USER/KM2, 8 SEARCH AGENTS , AND 1000 ITERATIONS	41
D. SCENARIO 4: SUB URBAN WITH 50 KM2 AREA, 20 USER/KM2, 8 SEARCH AGENTS , AND 500 ITERATIONS	41
E. SCENARIO 5: SUB URBAN WITH 50 KM2 AREA, 10 USER/KM2, 8 SEARCH AGENTS , AND 500 ITERATIONS	42
F. SCENARIO 6: URBAN WITH 50 KM2 AREA, 10 USER/KM2, 8 SEARCH AGENTS , AND 500 ITERATIONS	43
G. SCENARIO 7: URBAN WITH 50 KM2 AREA, 10 USER/KM2, 15 SEARCH AGENTS , AND 500 ITERATIONS	44
CHAPTER 5	47
CONCLUSION AND RECOMMENDATION	47
5.1. CONCLUSION.....	47
5.2. RECOMMENDATION	47
REFERENCES.....	XI
APPENDIX	XIV
A. GWO MATLAB CODE	XIV
B. DOUBLE STEP GWO MATLAB CODE.....	XVI