

CONTENTS

HALAMAN PENGESAHAN	ii
PREFACE	iii
CONTENTS	vi
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF SYMBOLS	xiv
Abstract	xvii
Intisari	xviii
CHAPTER I	1
1.1 MOTIVATION	1
1.2 PROBLEM STATEMENT	3
1.3 THESIS ORGANIZATION	3
CHAPTER II	4
2.1 SENSOR COVERAGE MODELING	4
2.2 VORONOI-BASED STRATEGY OPTIMIZATION	6
2.2.1 VORONOI DIAGRAM	7
2.2.2 VORONOI REGION OPTIMIZATION	9
2.3 POWER DIAGRAM-BASED STRATEGY OPTIMIZATION	12
2.4 LLOYD-MAX ALGORITHM	16
CHAPTER III	18
3.1 NATURAL POTENTIAL FUNCTION	18
3.2 PATH PLANNING VIA ARTIFICIAL POTENTIAL FUNCTION	22
CHAPTER IV	29
4.1 COVERAGE CONTROL STRATEGY	29
4.1.1 VORONOI-BASED COVERAGE CONTROL	29
4.1.2 POWER DIAGRAM-BASED COVERAGE CONTROL	31
4.2 OBSTACLE AVOIDANCE STRATEGY	33
4.3 PRODUCING CONTROL SIGNAL	37



4.4 SIMULATION DESIGN	39
4.4.1 VORONOI-BASED COVERAGE CONTROL.....	40
4.4.2 POWER DIAGRAM-BASED COVERAGE CONTROL	41
4.4.3 COVERAGE CONTROL AND SIMPLE OBSTACLE AVOIDANCE	42
CHAPTER V	44
5.1 VORONOI-BASED COVERAGE CONTROL	44
5.2 POWER DIAGRAM-BASED COVERAGE CONTROL	53
5.3 COVERAGE CONTROL AND SIMPLE OBSTACLE AVOIDANCE.....	67
CHAPTER VI.....	75
6.1 CONCLUSIONS.....	75
6.2 FUTURE WORKS.....	76
REFERENCES	77