

Contents

Abstract	i
Acknowledgement	ii
Preface	iv
Contents	v
List of Figure	vii
List of Table	xiii
I Introduction	1
1.1 Overview	1
1.2 Statement Problem	3
1.3 Objective	4
1.4 Scope	4
1.5 Hypothesis	4
1.6 Summary	5
II Related Works	6
2.1 Tracking	6
2.2 Trajectory	7
2.3 Mobile Device	7
2.4 Embedded Sensors on the Mobile Device	8
2.4.1 Motion Sensor	9
2.4.2 Environment Sensor	10
2.4.3 Position Sensor	12
2.5 Algorithm	12
2.6 Summary	15
III System Methodology and Design	17
3.1 Research Methodology	17
3.2 System Requirements	18

3.2.1	Hardware	18
3.2.2	Software	18
3.3	System Model	18
3.3.1	System Architecture	18
3.3.2	Data Structure	19
3.3.3	Algorithms	20
3.4	Summary	23
IV	Result and Analysis	24
4.1	Testing Scenario	24
4.1.1	Threshold	26
4.1.2	Device Position	26
4.1.3	Range Walking	27
4.2	Testing Result	28
4.2.1	Threshold	28
4.2.2	Device Position	31
4.2.3	Range Walking	37
4.3	Summary	40
V	Conclusions and Recommendations	41
5.1	Conclusions	41
5.2	Future Work	42
	Bibliography	43
	Appendices	46