

Contents

1	Introduction	1
1.1	Background and Motivation	1
1.2	Contributions	2
1.3	Outline of the Book	3
References		4
2	Feasibility of Launching User Spoofing	5
References		6
3	Attack Detection Model	7
3.1	Formulation of Attack Detection	8
3.2	Theoretical Analysis of the Spatial Correlation of RSS	8
3.3	Detection Philosophy	11
3.4	Experimental Methodology	13
3.4.1	Experimental Setup	13
3.4.2	Metrics	14
3.5	Performance Evaluation	16
3.5.1	Impact of Threshold and Sampling Number	16
3.5.2	Handling Different Transmission Power Levels	16
3.5.3	Performance of Detection	19
3.5.4	Impact of Distance Between the Spoofing Node and the Original Node	19
3.6	Summary	21
References		21
4	Detection and Localizing Multiple Spoofing Attackers	23
4.1	Problem Formulation	24
4.2	Attacker Number Determination	25
4.2.1	Silhouette Plot	25
4.2.2	System Evolution	27
4.2.3	The SILENCE Mechanism	29
4.2.4	Support Vector Machines Based Mechanism	33

4.3	Localizing Adversaries	35
4.3.1	Framework	35
4.3.2	Algorithms	36
4.3.3	Experimental Evaluation	40
4.4	Summary	40
	References	41
5	Detecting Mobile Agents Using Identity Fraud	43
5.1	Motivation	43
5.2	Detection System Approach	44
5.2.1	Attack Model	44
5.2.2	DEMOTE System Overview	44
5.2.3	RSS Partitioning	45
5.2.4	Trace Reconstruction	49
5.2.5	Correlation Coefficient Calculation	50
5.3	Experimental Evaluation	53
5.3.1	Experimental Methodology	53
5.3.2	Detection in Signal Space	55
5.3.3	Detection in Physical Space	61
5.4	Summary	64
	References	65
6	Related Work	67
	References	68
7	Conclusions and Future Work	71