

Contents

Part I Introduction

1	Cyberpatterns: Towards a Pattern Oriented Study of Cyberspace	3
	Hong Zhu	
2	Towards a Conceptual Framework for Security Patterns	17
	Clive Blackwell	

Part II Pattern Representation

3	Design Patterns: Applications and Open Issues	37
	K. Lano	
4	Challenges for a Formal Framework for Patterns	47
	Ian Bayley	
5	Towards a General Theory of Patterns	57
	Hong Zhu	

Part III Introduction to Security Patterns

6	Extending AOP Principles for the Description of Network Security Patterns	73
	David Llewellyn-Jones, Qi Shi and Madjid Merabti	
7	Management Patterns for Network Resilience: Design and Verification of Policy Configurations	85
	Alberto Schaeffer-Filho, Paul Smith, Andreas Mauthe and David Hutchison	

8	A Heuristic Approach for Secure Service Composition Adaptation	97
	Bo Zhou, David Llewellyn-Jones, David Lamb, Muhammad Asim, Qi Shi and Madjid Merabti	

Part IV Introduction to Attack Patterns

9	A Strategy for Structuring and Formalising Attack Patterns	111
	Clive Blackwell	
10	Attack Pattern Recognition Through Correlating Cyber Situational Awareness in Computer Networks	125
	Noor-ul-hassan Shirazi, Alberto Schaeffer-Filho and David Hutchison	
11	Towards a Penetration Testing Framework Using Attack Patterns	135
	Clive Blackwell	
12	A Method for Resolving Security Vulnerabilities Through the Use of Design Patterns	149
	Nick Walker, Natalie Coull, Ian Ferguson and Allan Milne	
13	‘Weird Machine’ Patterns	157
	Sergey Bratus, Julian Bangert, Alexandar Gabrovsky, Anna Shubina, Michael E. Locasto and Daniel Bilar	

Part V Socio-technical Aspects of Patterns

14	Towards a Simulation of Information Security Behaviour in Organisations	177
	Martin Ruskov, Paul Ekblom and M. Angela Sasse	
15	Security Design Patterns in the MASTER Workbench.	185
	Paul J. Kearney, David A. Sinclair and Sebastian Wagner	
16	Evaluating the Implications of Attack and Security Patterns with Premortems	199
	Shamal Faily, Simon Parkin and John Lyle	

Part VI Pattern Recognition

- 17 An Overview of Artificial Intelligence Based Pattern Matching in a Security and Digital Forensic Context** 215
Faye Rona Mitchell
- 18 Partitional Clustering of Malware Using K-Means.** 223
Renato Cordeiro de Amorim and Peter Komisarczuk
- 19 Dynamic Monitoring of Composed Services.** 235
Muhammad Asim, Bo Zhou, David Llewellyn-Jones,
Qi Shi and Madjid Merabti
- 20 Where has this Hard Disk Been?: Extracting Geospatial Intelligence from Digital Storage Systems** 247
Harjinder Singh Lallie and Nathan Griffiths

Part VII The Future

- 21 Future Directions for Research on Cyberpatterns** 259
Clive Blackwell and Hong Zhu

Cyberpatterns

Unifying Design Patterns with Security and Attack
Patterns

Blackwell, C.; Zhu, H. (Eds.)

2014, XI, 264 p. 48 illus., Hardcover

ISBN: 978-3-319-04446-0