

Commenced Publication in 1973

Founding and Former Series Editors:

Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

Editorial Board

David Hutchison

Lancaster University, UK

Takeo Kanade

Carnegie Mellon University, Pittsburgh, PA, USA

Josef Kittler

University of Surrey, Guildford, UK

Jon M. Kleinberg

Cornell University, Ithaca, NY, USA

Friedemann Mattern

ETH Zurich, Switzerland

John C. Mitchell

Stanford University, CA, USA

Moni Naor

Weizmann Institute of Science, Rehovot, Israel

Oscar Nierstrasz

University of Bern, Switzerland

C. Pandu Rangan

Indian Institute of Technology, Madras, India

Bernhard Steffen

University of Dortmund, Germany

Madhu Sudan

Massachusetts Institute of Technology, MA, USA

Demetri Terzopoulos

New York University, NY, USA

Doug Tygar

University of California, Berkeley, CA, USA

Moshe Y. Vardi

Rice University, Houston, TX, USA

Gerhard Weikum

Max-Planck Institute of Computer Science, Saarbruecken, Germany

Paul Kantor Gheorghe Muresan
Fred Roberts Daniel D. Zeng
Fei-Yue Wang Hsinchun Chen
Ralph C. Merkle (Eds.)

Intelligence and Security Informatics

IEEE International Conference
on Intelligence and Security Informatics, ISI 2005
Atlanta, GA, USA, May 19-20, 2005
Proceedings



Springer

Volume Editors

Paul Kantor
Gheorghe Muresan
Rutgers University
School of Communication, Information and Library Studies
4 Huntington Street, New Brunswick, NJ 08901-1071, USA
E-mail: {kantor,muresan}@scils.rutgers.edu

Fred Roberts
Rutgers University
Department of Mathematics
Center for Discrete Mathematics and Theoretical Computer Science
96 Frelinghuysen Road, Piscataway, NJ 08854-8018, USA
E-mail: froberts@dimacs.rutgers.edu

Daniel D. Zeng
Hsinchun Chen
University of Arizona
Department of Management Information Systems
1130 East Helen Street, Tucson, AZ 85721-0108, USA
E-mail: {zeng,hchen}@eller.arizona.edu

Fei-Yue Wang
University of Arizona
Department of Systems and Industrial Engineering
1127 East North Campus Drive, Tucson, AZ 85721-0020, USA
E-mail: feiyue@sie.arizona.edu

Ralph C. Merkle
Georgia Institute of Technology
College of Computing, Georgia Tech Information Security Center
801 Atlantic Drive, Atlanta, GA 30332-0280, USA
E-mail: merkle@cc.gatech.edu

Library of Congress Control Number: 2005925606

CR Subject Classification (1998): H.4, H.3, C.2, H.2, D.4.6, K.4.1, K.5, K.6

ISSN 0302-9743
ISBN-10 3-540-25999-6 Springer Berlin Heidelberg New York
ISBN-13 978-3-540-25999-2 Springer Berlin Heidelberg New York

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer. Violations are liable to prosecution under the German Copyright Law.

Springer is a part of Springer Science+Business Media

springeronline.com

© Springer-Verlag Berlin Heidelberg 2005
Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India
Printed on acid-free paper SPIN: 11427995 06/3142 5 4 3 2 1 0

Preface

Intelligence and security informatics (ISI) can be broadly defined as the study of the development and use of advanced information technologies and systems for national and international security-related applications, through an integrated technological, organizational, and policy-based approach. In the past few years, ISI research has experienced tremendous growth and attracted substantial interest from academic researchers in related fields as well as practitioners from both government agencies and industry.

The first two meetings (ISI 2003 and ISI 2004) in the ISI symposium and conference series were held in Tucson, Arizona, in 2003 and 2004, respectively. They provided a stimulating intellectual forum for discussion among previously disparate communities: academic researchers in information technologies, computer science, public policy, and social studies; local, state, and federal law enforcement and intelligence experts; and information technology industry consultants and practitioners.

Building on the momentum of these ISI meetings and with sponsorship by the IEEE, we held the IEEE International Conference on Intelligence and Security Informatics (ISI 2005) in May 2005 in Atlanta, Georgia. In addition to the established and emerging ISI research topics covered at past ISI meetings, ISI 2005 included a new track on Terrorism Informatics, which is a new stream of terrorism research leveraging the latest advances in social science methodologies, and information technologies and tools.

ISI 2005 was jointly hosted by Rutgers, the State University of New Jersey; the University of Arizona (UA); and the Georgia Institute of Technology (GATECH). The two-day program included one plenary panel discussion session focusing on the perspectives and future research directions of the government funding agencies, several invited panel sessions, 62 regular papers, and 38 posters. In addition to the main sponsorship from the National Science Foundation, the Intelligence Technology Innovation Center, and the US Department of Homeland Security, the conference was also co-sponsored by several units within the three hosting universities including: the School of Communication, Information and Library Studies at Rutgers; the Center for Discrete Mathematics and Theoretical Computer Science at Rutgers; the Eller College of Management and the Management Information Systems Department at UA; the NSF COPLINK Center of Excellence at UA; the Mark and Susan Hoffman E-Commerce Laboratory at UA; the Artificial Intelligence Laboratory at UA; the Program for Advanced Research in Complex Systems at UA; the College of Computing at GATECH; and the Georgia Tech Information Security Center.

We wish to express our gratitude to all members of the ISI 2005 Program Committee and additional reviewers who provided high-quality, constructive review comments under an unreasonably short lead-time. Our special thanks go to Dr. Joshua Sinai and Dr. Edna Reid who recruited high-caliber contributors from the terrorism

informatics research community and helped process submissions in the terrorism informatics area. We wish to express our gratitude to Ms. Catherine Larson, Ms. Priscilla Rasmussen, Mr. Shing Ka Wu, Ms. Shelee Saal, and Ms. Sarah Donnelly for providing excellent conference logistics support. We also would like to thank Mr. Jialun Qin, Mr. Daning Hu, Mr. Tao Wang, Mr. Jian Ma, and Mr. Xiaopeng Zhong, all graduates students at UA, for their great help with compiling the proceedings.

ISI 2005 was co-located with the 6th Annual National Conference on Digital Government Research (DG.O). We wish to thank the DG.O organizers and support staff for their cooperation and assistance. We also would like to thank the Springer LNCS editorial and production staff for their professionalism and continuous support for the ISI symposium and conference series.

Our sincere gratitude goes to all of the sponsors. Last, but not least, we thank Dr. Joshua Sinai, Dr. Art Becker, Dr. Michael Pazzani, Dr. Valerie Gregg, and Dr. Larry Brandt for their strong and continuous support of the ISI series and other related ISI research.

May 2005

Paul Kantor
Gheorghe Muresan
Fred Roberts
Daniel Zeng
Fei-Yue Wang
Hsinchun Chen
Ralph Merkle

Organization

ISI 2005 Organizing Committee

Conference Co-chairs:

Ralph Merkle
Hsinchun Chen

Georgia Institute of Technology
University of Arizona

Program Co-chairs:

Paul Kantor
Fred Roberts
Fei-Yue Wang
Gheorghe Muresan
Daniel Zeng

Rutgers University
Rutgers University
University of Arizona
Rutgers University
University of Arizona

Government Liaisons:

Valerie Gregg
Art Becker

National Science Foundation
Intelligence Technology
Innovation Center

Joshua Sinai

Department of Homeland Security

ISI 2005 Program Committee

Yigal Arens
Antonio Badia
Art Becker
Don Berndt
Larry Brandt
Donald Brown
Judee Burgoon
Guoray Cai
Kathleen Carley
Michael Chau
Sudarshan S. Chawathe
Peter Chen
Lee-Feng Chien
Wingyan Chung
Greg Conti
Ram Dantu
Boyd Davis
Chris Demchak

University of Southern California
University of Louisville
Intelligence Technology Innovation Center
University of South Florida
National Science Foundation
University of Virginia
University of Arizona
Pennsylvania State University
Carnegie Mellon University
University of Hong Kong
University of Maryland
Louisiana State University
Academia Sinica, Taiwan
University of Texas at El Paso
United States Military Academy
University of North Texas
University of North Carolina at Charlotte
University of Arizona

James Ellis	National Memorial Institute for the Prevention of Terrorism
Mark Frank	Rutgers University
Susan Gauch	University of Kansas
Johannes Gehrke	Cornell University
Joey George	Florida State University
Mark Goldberg	Rensselaer Polytechnic Institute
Valerie Gregg	National Science Foundation
Bob Grossman	University of Illinois at Chicago
Jiawei Han	University of Illinois at Urbana-Champaign
Alan R. Hevner	University of South Florida
Eduard Hovy	University of Southern California
Paul Hu	University of Utah
Judith Klavans	University of Maryland
Moshe Koppel	Bar-Ilan University, Israel
Don Kraft	Louisiana State University
Taekyoung Kwon	Sejong University, Korea
Seok-Won Lee	University of North Carolina at Charlotte
Gondy Leroy	Claremont Graduate University
Haifeng Li	Jilin University, China
Ee-peng Lim	Nanyang Technological University, Singapore
Chienting Lin	Pace University
Cecil Lynch	University of California at Davis
Therani Madhusudan	University of Arizona
Ofer Melnik	Rutgers University
Brinton Milward	University of Arizona
Pitu Mirchandani	University of Arizona
Clifford Neuman	University of Southern California
Greg Newby	University of Alaska, Fairbanks
Kwong Bor Ng	City University of New York
Jay Nunamaker	University of Arizona
Joon S. Park	Syracuse University
Ganapati P. Patil	Pennsylvania State University
Neal Pollard	Science Applications International Corporation
Peter Probst	Institute for the Study of Terrorism and Political Violence
Karin Quinones	University of Arizona
Yael Radlauer	International Policy Institute for Counter-Terrorism
Ram Ramesh	State University of New York at Buffalo
H. Raghav Rao	State University of New York at Buffalo
Edna Reid	University of Arizona
Mirek Riedewald	Cornell University
Dmitri Roussinov	Arizona State University
Marc Sageman	University of Pennsylvania
Raghu Santanam	Arizona State University

Reid Sawyer	United States Military Academy
Olivia Sheng	University of Utah
Amit Sheth	University of Georgia
Elizabeth Shriberg	Stanford Research Institute
Andrew Silke	University of East London, UK
Joshua Sinai	Department of Homeland Security
David Skillicorn	Queen's University, Canada
Cole Smith	University of Arizona
Sal Stolfo	Columbia University
Gary Strong	MITRE
Katia Sycara	Carnegie Mellon University
Paul Thompson	Dartmouth College
Ajay Vinze	Arizona State University
Ke Wang	Simon Fraser University, Canada
Gabriel Weimann	University of Haifa, Israel
Andrew Whinston	University of Texas at Austin
Chris Yang	Chinese University of Hong Kong
Mohammed Zaki	Rensselaer Polytechnic Institute
Xiangmin Zhang	Rutgers University
Huimin Zhao	University of Wisconsin, Milwaukee
Lina Zhou	University of Maryland, Baltimore County
David Zimmermann	Federal Bureau of Investigation

Additional Reviewers

Boanerges Aleman-Meza	University of Georgia
Homa Atabakhsh	University of Arizona
Jinwei Cao	University of Arizona
Wei Chang	University of Arizona
Dmitriy Fradkin	Rutgers University
Benjamin Fung	Simon Fraser University
Wei Gao	University of Arizona
Zan Huang	University of Arizona
Eul Gyu Im	Hanyang University, Korea
Vandana Janeja	Rutgers University
Dae-Ki Kang	Iowa State University
Gunes Kayacik	Dalhousie University, Canada
Siddharth Kaza	University of Arizona
Kameswari Kotapati	Pennsylvania State University
Guanpi Lai	University of Arizona
Jian Ma	University of Arizona
Anirban Majumdar	University of Auckland, New Zealand
Thomas Meservy	University of Arizona
Mark Patton	University of Arizona
Jialun Qin	University of Arizona
Rob Schumaker	University of Arizona

Yael Shahar

Ambareen Siraj

Catherine L. Smith

Shuang Sun

Wei Sun L.

Alan Wang

Jennifer Xu

Bulent Yener

Ozgur Yilmazel

Yilu Zhou

William Zhu

International Policy Institute
for Counter Terrorism

Mississippi State University

Rutgers University

Pennsylvania State University

Harbin Engineering University, China

University of Arizona

University of Arizona

Rensselaer Polytechnic Institute

Syracuse University

University of Arizona

University of Auckland, New Zealand

Table of Contents

Part I: Long Papers

Data and Text Mining

Collusion Set Detection Through Outlier Discovery <i>Vandana P. Janeja, Vijayalakshmi Atluri, Jaideep Vaidya, Nabil R. Adam</i>	1
Digging in the Details: A Case Study in Network Data Mining <i>John Galloway, Simeon J. Simoff</i>	14
Efficient Identification of Overlapping Communities <i>Jeffrey Baumes, Mark Goldberg, Malik Magdon-Ismael</i>	27
Event-Driven Document Selection for Terrorism Information Extraction <i>Zhen Sun, Ee-Peng Lim, Kuiyu Chang, Teng-Kwee Ong, Rohan K. Gunaratna</i>	37
Link Analysis Tools for Intelligence and Counterterrorism <i>Antonio Badia, Mehmed Kantardzic</i>	49
Mining Candidate Viruses as Potential Bio-terrorism Weapons from Biomedical Literature <i>Xiaohua Hu, Illhoi Yoo, Peter Rumm, Michael Atwood</i>	60
Private Mining of Association Rules <i>Justin Zhan, Stan Matwin, LiWu Chang</i>	72

Infrastructure Protection and Emergency Response

Design Principles of Coordinated Multi-incident Emergency Response Systems <i>Rui Chen, Raj Sharman, H. Raghav Rao, Shambhu J. Upadhyaya</i>	81
Multi-modal Biometrics with PKI Technologies for Border Control Applications <i>Taekyoung Kwon, Hyeonjoon Moon</i>	99
Risk Management Using Behavior Based Bayesian Networks <i>Ram Dantu, Prakash Kolan</i>	115
Sensitivity Analysis of an Attack Containment Model <i>Ram Dantu, João Cangussu, Janos Turi</i>	127
Toward a Target-Specific Method of Threat Assessment <i>Yael Shahar</i>	139

Information Management

Incident and Casualty Databases as a Tool for Understanding Low-Intensity Conflicts <i>Don Radlauer</i>	153
Integrating Private Databases for Data Analysis <i>Ke Wang, Benjamin C.M. Fung, Guozhu Dong</i>	171

Deception Detection and Authorship Analysis

Applying Authorship Analysis to Arabic Web Content <i>Ahmed Abbasi, Hsinchun Chen</i>	183
Automatic Extraction of Deceptive Behavioral Cues from Video <i>Thomas O. Meservy, Matthew L. Jensen, John Kruse, Judee K. Burgoon, Jay F. Nunamaker</i>	198
Automatically Determining an Anonymous Author's Native Language <i>Moshe Koppel, Jonathan Schler, Kfir Zigdon</i>	209

Monitoring and Surveillance

A Cognitive Model for Alert Correlation in a Distributed Environment <i>Ambareen Siraj, Rayford B. Vaughn</i>	218
Beyond Keyword Filtering for Message and Conversation Detection <i>David B. Skillicorn</i>	231
Content-Based Detection of Terrorists Browsing the Web Using an Advanced Terror Detection System (ATDS) <i>Yuval Elovici, Bracha Shapira, Mark Last, Omer Zaafrany, Menahem Friedman, Moti Schneider, Abraham Kandel</i>	244
Modeling and Multiway Analysis of Chatroom Tensors <i>Evrin Acar, Seyit A. Çamtepe, Mukkai S. Krishnamoorthy, Büilent Yener</i>	256
Selective Fusion for Speaker Verification in Surveillance <i>Yosef A. Solewicz, Moshe Koppel</i>	269

Terrorism Informatics

A New Conceptual Framework to Resolve Terrorism's Root Causes <i>Joshua Sinai</i>	280
Analyzing Terrorist Networks: A Case Study of the Global Salafi Jihad Network <i>Jialun Qin, Jennifer J. Xu, Daning Hu, Marc Sageman, Hsinchun Chen</i>	287

A Conceptual Model of Counterterrorist Operations <i>David Davis, Allison Frenyak-Blume, Jennifer Wheeler, Alexander E.R. Woodcock, Clarence Worrell III</i>	305
Measuring Success in Countering Terrorism: Problems and Pitfalls <i>Peter S. Probst</i>	316
Mapping the Contemporary Terrorism Research Domain: Researchers, Publications, and Institutions Analysis <i>Edna Reid, Hsinchun Chen</i>	322
Testing a Rational Choice Model of Airline Hijackings <i>Laura Dugan, Gary LaFree, Alex R. Piquero</i>	340

Part II: Short Papers

Data and Text Mining

Analysis of Three Intrusion Detection System Benchmark Datasets Using Machine Learning Algorithms <i>H. Güneş Kayacik, Nur Zincir-Heywood</i>	362
Discovering Identity Problems: A Case Study <i>Alan G. Wang, Homa Atabakhsh, Tim Petersen, Hsinchun Chen</i>	368
Efficient Discovery of New Information in Large Text Databases <i>R.B. Bradford</i>	374
Leveraging One-Class SVM and Semantic Analysis to Detect Anomalous Content <i>Ozgur Yilmazel, Svetlana Symonenko, Niranjana Balasubramanian, Elizabeth D. Liddy</i>	381
LSI-Based Taxonomy Generation: The Taxonomist System <i>Janusz Wnek</i>	389
Some Marginal Learning Algorithms for Unsupervised Problems <i>Qing Tao, Gao-Wei Wu, Fei-Yue Wang, Jue Wang</i>	395

Information Management and Sharing

Collecting and Analyzing the Presence of Terrorists on the Web: A Case Study of Jihad Websites <i>Edna Reid, Jialun Qin, Yilu Zhou, Guanpi Lai, Marc Sageman, Gabriel Weimann, Hsinchun Chen</i>	402
Evaluating an Infectious Disease Information Sharing and Analysis System <i>Paul J.-H. Hu, Daniel Zeng, Hsinchun Chen, Catherine Larson, Wei Chang, Chunju Tseng</i>	412

How Question Answering Technology Helps to Locate Malevolent Online Content <i>Dmitri Roussinov, Jose Antonio Robles-Flores</i>	418
Information Supply Chain: A Unified Framework for Information-Sharing <i>Shuang Sun, John Yen</i>	422
Map-Mediated GeoCollaborative Crisis Management <i>Guoray Cai, Alan M. MacEachren, Isaac Brewer, Mike McNeese, Rajeev Sharma, Sven Fuhrmann</i>	429
Thematic Indicators Derived from World News Reports <i>Clive Best, Erik Van der Goot, Monica de Paola</i>	436
Copyright and Privacy Protection	
A Novel Watermarking Algorithm Based on SVD and Zernike Moments <i>Haifeng Li, Shuxun Wang, Weiwei Song, Quan Wen</i>	448
A Survey of Software Watermarking <i>William Zhu, Clark Thomborson, Fei-Yue Wang</i>	454
Data Distortion for Privacy Protection in a Terrorist Analysis System <i>Shuting Xu, Jun Zhang, Dianwei Han, Jie Wang</i>	459
Deception Detection	
Deception Across Cultures: Bottom-Up and Top-Down Approaches <i>Lina Zhou, Simon Lutterbie</i>	465
Detecting Deception in Synchronous Computer-Mediated Communication Using Speech Act Profiling <i>Douglas P. Twitchell, Nicole Forsgren, Karl Wiers, Judee K. Burgoon, Jay F. Nunamaker Jr.</i>	471
Information Security and Intrusion Detection	
Active Automation of the DITSCAP <i>Seok Won Lee, Robin A. Gandhi, Gail-Joon Ahn, Deepak S. Yavagal</i>	479
An Ontological Approach to the Document Access Problem of Insider Threat <i>Boanerges Aleman-Meza, Phillip Burns, Matthew Eavenson, Devanand Palaniswami, Amit Sheth</i>	486
Filtering, Fusion and Dynamic Information Presentation: Towards a General Information Firewall <i>Gregory Conti, Mustaque Ahamad, Robert Norback</i>	492

Intrusion Detection System Using Sequence and Set Preserving Metric <i>Pradeep Kumar, M. Venkateswara Rao, P. Radha Krishna, Raju S. Bapi, Arijit Laha</i>	498
The Multi-fractal Nature of Worm and Normal Traffic at Individual Source Level <i>Yufeng Chen, Yabo Dong, Dongming Lu, Yunhe Pan</i>	505
Learning Classifiers for Misuse Detection Using a Bag of System Calls Representation <i>Dae-Ki Kang, Doug Fuller, Vasant Honavar</i>	511
Infrastructure Protection and Emergency Response	
A Jackson Network-Based Model for Quantitative Analysis of Network Security <i>Zhengtao Xiang, Yufeng Chen, Wei Jian, Fei Yan</i>	517
Biomonitoring, Phylogenetics and Anomaly Aggregation Systems <i>David R.B. Stockwell, Jason T.L. Wang</i>	523
CODESSEAL: Compiler/FPGA Approach to Secure Applications <i>Olga Gelbart, Paul Ott, Bhagirath Narahari, Rahul Simha, Alok Choudhary, Joseph Zambreno</i>	530
Computational Tool in Infrastructure Emergency Total Evacuation Analysis <i>Kelvin H.L. Wong, Mingchun Luo</i>	536
Performance Study of a Compiler/Hardware Approach to Embedded Systems Security <i>Kripashankar Mohan, Bhagirath Narahari, Rahul Simha, Paul Ott, Alok Choudhary, Joseph Zambreno</i>	543
A Secured Mobile Phone Based on Embedded Fingerprint Recognition Systems <i>Xinjian Chen, Jie Tian, Qi Su, Xin Yang, Fei-Yue Wang</i>	549
Terrorism Informatics	
Connections in the World of International Terrorism <i>Yael Shahar</i>	554
Forecasting Terrorism: Indicators and Proven Analytic Techniques <i>Sundri K. Khalsa</i>	561
Forecasting Terrorist Groups' Warfare: 'Conventional' to CBRN <i>Joshua Sinai</i>	567
The Qualitative Challenge of Insurgency Informatics <i>Scott Tousley</i>	571

The Application of PROACT® RCA to Terrorism/Counter Terrorism Related Events <i>Robert J. Latino</i>	579
--	-----

Part III: Extended Abstracts for Posters and Demos

Data and Text Mining

A Group Decision-Support Method for Search and Rescue Based on Markov Chain <i>Huizhang Shen, Jidi Zhao, Ying Peng</i>	590
A New Relationship Form in Data Mining <i>Suwimon Kooptiwoot, Muhammad Abdus Salam</i>	593
A Study of “Root Causes of Conflict” Using Latent Semantic Analysis <i>Mihaela Bobeica, Jean-Paul Jéral, Teofilo Garcia, Clive Best</i>	595
An Empirical Study on Dynamic Effects on Deception Detection <i>Tiantian Qin, Judee K. Burgoon</i>	597
Anti Money Laundering Reporting and Investigation – Sorting the Wheat from the Chaff <i>Ana Isabel Canhoto, James Backhouse</i>	600
Application of Latent Semantic Indexing to Processing of Noisy Text <i>Robert J. Price, Anthony E. Zukas</i>	602
Detecting Misuse of Information Retrieval Systems Using Data Mining Techniques <i>Nazli Goharian, Ling Ma, Chris Meyers</i>	604
Mining Schemas in Semistructured Data Using Fuzzy Decision Trees <i>Wei Sun, Da-xin Liu</i>	606
More Than a Summary: Stance-Shift Analysis <i>Boyd Davis, Vivian Lord, Peyton Mason</i>	608
Principal Component Analysis (PCA) for Data Fusion and Navigation of Mobile Robots <i>Zeng-Guang Hou</i>	610

Information Management and Sharing

BioPortal: Sharing and Analyzing Infectious Disease Information <i>Daniel Zeng, Hsinchun Chen, Chunju Tseng, Catherine Larson, Wei Chang, Millicent Eidson, Ivan Gotham, Cecil Lynch, Michael Ascher</i>	612
---	-----

DIANE: Revolutionizing the Way We Collect, Analyze, and Share Information <i>Jin Zhu</i>	614
Processing High-Speed Intelligence Feeds in Real-Time <i>Alan Demers, Johannes Gehrke, Mingsheng Hong, Mirek Riedewald</i>	617
Question Answer TARA: A Terrorism Activity Resource Application <i>Rob Schumaker, Hsinchun Chen</i>	619
Template Based Semantic Similarity for Security Applications <i>Boanerges Aleman-Meza, Christian Halaschek-Wiener, Satya Sanket Sahoo, Amit Sheth, I. Budak Arpinar</i>	621
The Dark Web Portal Project: Collecting and Analyzing the Presence of Terrorist Groups on the Web <i>Jialun Qin, Yilu Zhou, Guanpi Lai, Edna Reid, Marc Sageman, Hsinchun Chen</i>	623
Toward an ITS Specific Knowledge Engine <i>Guanpi Lai, Fei-Yue Wang</i>	625
Information Security and Intrusion Detection	
A Blind Image Watermarking Using for Copyright Protection and Tracing <i>Haifeng Li, Shuxun Wang, Weiwei Song, Quan Wen</i>	627
Towards an Effective Wireless Security Policy for Sensitive Organizations <i>Michael Manley, Cheri McEntee, Anthony Molet, Joon S. Park</i>	629
A Taxonomy of Cyber Attacks on 3G Networks <i>Kameswari Kotapati, Peng Liu, Yan Sun, Thomas F. LaPorta</i>	631
An Adaptive Approach to Handle DoS Attack for Web Services <i>Eul Gyu Im, Yong Ho Song</i>	634
An Architecture for Network Security Using Feedback Control <i>Ram Dantu, João W. Cangussu</i>	636
Defending a Web Browser Against Spying with Browser Helper Objects <i>Beomsoo Park, Sungjin Hong, Jaewook Oh, Heejo Lee</i>	638
Dynamic Security Service Negotiation to Ensure Security for Information Sharing on the Internet <i>ZhengYou Xia, YiChuan Jiang, Jian Wang</i>	640
Enhancing Spatial Database Access Control by Eliminating the Covert Topology Channel <i>Young-Hwan Oh, Hae-Young Bae</i>	642
Gathering Digital Evidence in Response to Information Security Incidents <i>Shiuh-Jeng Wang, Cheng-Hsing Yang</i>	644

On the QP Algorithm in Software Watermarking <i>William Zhu, Clark Thomborson</i>	646
On the Use of Opaque Predicates in Mobile Agent Code Obfuscation <i>Anirban Majumdar, Clark Thomborson</i>	648
Secure Contents Distribution Using Flash Memory Technology <i>Yong Ho Song, Eul Gyu Im</i>	650
Infrastructure Protection and Emergency Response	
Background Use of Sensitive Information to Aid in Analysis of Non-sensitive Data on Threats and Vulnerabilities <i>Richard A. Smith</i>	652
Securing Grid-Based Critical Infrastructures <i>Syed Naqvi, Michel Riguidel</i>	654
The Safety Alliance of Cushing – A Model Example of Cooperation as an Effective Counterterrorism Tool <i>David Zimmermann</i>	656
Surveillance, Border Protection, and Transportation Systems	
A Framework for Global Monitoring and Security Assistance Based on IPv6 and Multimedia Data Mining Techniques <i>Xiaoyan Gong, Haijun Gao</i>	658
An Agent-Based Framework for a Traffic Security Management System <i>Shuming Tang, Haijun Gao</i>	660
Application of a Decomposed Support Vector Machine Algorithm in Pedestrian Detection from a Moving Vehicle <i>Hong Qiao, Fei-Yue Wang, Xianbin Cao</i>	662
Application of Cooperative Co-evolution in Pedestrian Detection Systems <i>Xianbin Cao, Hong Qiao, Fei-Yue Wang, Xinzheng Zhang</i>	664
Biometric Fingerprints Based Radio Frequency Identification <i>Sundaram Jayakumar, Chandramohan Senthilkumar</i>	666
BorderSafe: Cross-Jurisdictional Information Sharing, Analysis, and Visualization <i>Siddharth Kaza, Byron Marshall, Jennifer Xu, Alan G. Wang, Hemanth Gowda, Homa Atabakhsh, Tim Petersen, Chuck Violette, Hsinchun Chen</i>	669
Author Index	671