Intelligent Multimedia Surveillance

Current Trends and Research

Intelligent multimedia surveillance concerns the analysis of multiple sensing inputs including video and audio streams, radio-frequency identification (RFID), and depth data. These data are processed for the automated detection and tracking of people, vehicles, and other objects.

Features

- Valuable for researchers in security, multimedia, and artificial intelligence
- Takes a multidisciplinary perspective
- Contributing authors represent competence in a broad range of topics

Contents


Fields of interest

Artificial Intelligence (incl. Robotics); Multimedia Information Systems; Image Processing and Computer Vision

Target groups

Research

Product category

Monograph

Compression Schemes for Mining Large Datasets

A Machine Learning Perspective

This book addresses the challenges of data abstraction generation using a least number of database scans, compressing data through novel lossy and non-lossy schemes, and carrying out clustering and classification directly in the compressed domain. Schemes are presented which are shown to be efficient both in terms of space and time, while simultaneously providing the same or better classification accuracy.

Features

- Examines all aspects of data abstraction generation using a least number of database scans
- Discusses compressing data through novel lossy and non-lossy schemes
- Proposes schemes for carrying out clustering and classification directly in the compressed domain

Contents


Fields of interest

Pattern Recognition; Data Mining and Knowledge Discovery; Artificial Intelligence (incl. Robotics)

Target groups

Research

Product category

Monograph

Personality Capture and Emulation

Personality Capture and Emulation is the gateway to an amazing future that actually may be achieved, enabling the preservation and simulation of human personalities at progressively higher levels of fidelity. This challenge is no longer the province merely of uninhibited visionaries, but has become a solid field of research, drawing upon a wide range of information technologies in human-centered computing and cyber-human systems. Even at modest levels of accomplishment, research in this emerging area requires convergence of cognitive, social, and cultural sciences, in cooperation with information engineering and artificial intelligence, thus stimulating new multidisciplinary perspectives. Therefore this book will inspire many specific research and development projects that will produce their own valuable outcomes, even as the totality of the work moves us closer to a major revolution in human life.

Features

- The most comprehensive approach to cyber-immortality, based on real research
- Rigorously examines how a remarkable vision can actually be achieved
- The convergence of information, cognitive, and social sciences makes this a truly cross-disciplinary research topic

Contents


Fields of interest

User Interfaces and Human Computer Interaction; Computer Appl. in Social and Behavioral Sciences; Sociology, general

Target groups

Research

Product category

Monograph
J. Cecílio, P. Furtado, University of Coimbra, Portugal

**Wireless Sensors in Industrial Time-Critical Environments**

This book introduces the fundamentals of DCS, and shows how to include wireless technology in their design while guaranteeing the desired operation characteristics. The text also presents insights and results gained from extensive practical experience in implementing and testing systems within a specific industrial setting.

**Features**
- Explains how to provide operation time guarantees in heterogeneous distributed control systems with wireless sensor components
- Describes how to integrate wireless sensors and wireless sensor networks into standard industrial systems
- Offers advice on planning industrial distributed control systems

**Contents**

**Fields of interest**
Computer Communication Networks; Control Systems

**Target groups**
Research

**Product category**
Monograph

---

E. Cortez, A. d. da Silva, Universidade Federal do Amazonas, Manaus, Brazil

**Unsupervised Information Extraction by Text Segmentation**

A new unsupervised approach to the problem of Information Extraction by Text Segmentation (IETS) is proposed, implemented and evaluated herein. The authors’ approach relies on information available on pre-existing data to learn how to associate segments in the input string with attributes of a given domain relying on a very effective set of content-based features. The effectiveness of the content-based features is also exploited to directly learn from test data structure-based features, with no previous human-driven training, a feature unique to the presented approach. Based on the approach, a number of results are produced to address the IETS problem in an unsupervised fashion.

**Features**
- Presents and evaluates a new unsupervised approach for the problem of Information Extraction by Text Segmentation (IETS)
- Describes how to automatically use content-based features to directly learn structure-based features, with no previous human-driven training, a feature unique to the authors’ approach
- Includes detailed experimental evaluations of different information extraction methods considering different domains and scenarios

**Contents**
Foreword. - Preface. - Introduction. - Related Work. - Exploiting Pre-Existing Datasets to Support IETS. - ONDUX. - JUDIE. - iForm. - Conclusions and Future Work.

**Fields of interest**
Database Management; Data Mining and Knowledge Discovery; Information Storage and Retrieval

**Target groups**
Research

**Product category**
Brief

---

F. Frommlet, University of Vienna Dept. Stats. & Decision Support Systems, Vienna, Austria; M. Bogdan, Wrocław University of Technology Inst. of Mathematics & Computer Science, Wrocław, Poland

**Phenotypes and Genotypes**

Search for Influential Genes

This book presents the methodology of association mapping in experimental populations and genome-wide association studies (GWAS). The main emphasis is placed on methods based on modifications of the Bayesian information criterion, designed specifically to handle multiple testing problems in large-scale genome scans for trait loci (TL). The book is written at the level of a graduate course for bioinformatics students.

The first chapter introduces the major concepts of quantitative trait loci (QTL) mapping. The second chapter discusses the methodology of QTL mapping in experimental populations, with the main emphasis on the related issues of model selection in linear models. The approach is then extended to TL via generalized linear models. Chapter three describes the methods for GWAS and related multiple testing and model selection problems. In both chapters two and three the properties of QTL mapping methods are illustrated with computer simulations and real data analysis.

**Features**
- Introduces the major concepts of Quantitative Trait Loci mapping
- Discusses the methodology of Quantitative Trait Loci mapping in experimental populations
- Discusses the methods for Genome Wide Association Studies and related multiple testing and model selection problems

**Fields of interest**
Computational Biology/Bioinformatics; Bioinformatics; Statistics for Life Sciences, Medicine, Health Sciences

**Target groups**
Research

**Product category**
Monograph
D. M. Gabbay, King's College London, London, UK

Reactive Kripke Semantics

This book offers a detailed theory of reactive Kripke semantics in the first seven chapters, followed by five chapters demonstrating applications in a variety of areas. It’s useful for researchers and graduate students of mathematical logic.

Features
► First consolidated monograph on reactive Kripke semantics ► Suitable for researchers in mathematical logic ► First presents detailed theory of reactive Kripke semantics, then applications in a variety of areas

Contents

Fields of interest
Mathematical Logic and Formal Languages; Artifical Intelligence (incl. Robotics); Mathematical Logic and Foundations

Target groups
Research

Product category
Monograph

Y. Hamadi, Microsoft Research Cambridge, Cambridge, UK

Combinatorial Search: From Algorithms to Systems

Although they are believed to be unsolvable in general, tractability results suggest that some practical NP-hard problems can be efficiently solved. Combinatorial search algorithms are designed to efficiently explore the usually large solution space of these instances by reducing the search space to feasible regions and using heuristics to efficiently explore these regions. Various mathematical formalisms may be used to express and tackle combinatorial problems, among them the constraint satisfaction problem (CSP) and the propositional satisfiability problem (SAT). These algorithms, or constraint solvers, apply search space reduction through inference techniques, use activity-based heuristics to guide exploration, diversify the searches through frequent restarts, and often learn from their mistakes.

Features
► Summarizes the state of the art and proposes a clear architecture for solver and autonomous solvers ► Case studies translate the theoretical ideas into real-world applications ► Valuable for researchers and practitioners working on optimization, complexity theory, search, and constraints

Contents
Chap. 1 - Introduction.- Chap. 2 - Boosting Distributed Constraint Networks.- Chap. 3 - Parallel Tree Search for Satisfiability.- Chap. 4 - Parallel Local Search for Satisfiability.- Chap. 5 - Learning Variables Dependencies.- Chap. 6 - Continuous Search.- Chap. 7 - Autonomous Search.- Chap. 8 - Conclusion and Perspectives.

Fields of interest
Artificial Intelligence (incl. Robotics); Computational Intelligence; Theory of Computation

Target groups
Research

Product category
Monograph

R. Hauser, Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany

Foundations of Computational Linguistics

Human-Computer Communication in Natural Language

Features
► Presents a unique approach to the natural-language processing ► Textbook also of value to researchers and engineers ► Author is an established researcher in computational linguistics

Contents

Fields of interest
Language Translation and Linguistics; Computational Linguistics; Artificial Intelligence (incl. Robotics)

Target groups
Upper undergraduate

Product category
Graduate/Advanced undergraduate textbook

Due December 2013

► approx. * € (D) 101,64 | € (A) 104,49 | sFr 126,50
► approx. € 94,99 | £85.50
ISBN 978-3-642-41388-9

Due December 2013

2013. XIV, 158 p. 30 illus., 16 in color. Hardcover
► * € (D) 90,94 | € (A) 93,49 | sFr 113,50
► € 84,99 | £76.50
ISBN 978-3-642-41481-7

Due December 2013

► * € (D) 74,89 | € (A) 76,99 | sFr 93,50
► € 69,99 | £62,99
ISBN 978-3-642-41430-5
**Situational Method Engineering**

While previously available methodologies for software engineering claimed to be appropriate for every conceivable project, situational method engineering (SME) acknowledges that most projects typically have individual characteristics and situations.

**Contents**

Part I SME Basics.- Chapter 1 Introduction.- Chapter 2 Method chunks, method fragments and method components.- Chapter 3 Method Engineering as a Social Practice.- Chapter 4 Formal descriptions.- Part II Applying SME in Practice.- Chapter 5 Identification and construction of individual method chunks/fragments.- Chapter 6 Processes for creating a methodology from method parts.- Chapter 7 Tailoring a constructed method.- Chapter 8 Assessing quality.- Chapter 9 Examples of constructed processes.- Part III The Future of SME.- Chapter 10 Recent advances in SME.- Chapter 11 Final summary and future work.

**Fields of interest**

Software Engineering; Management of Computing and Information Systems

**Product category**

Graduate/Advanced undergraduate textbook

**Target groups**

Graduate

**Due December 2013**

2013. X, 290 p. 166 illus., 58 in color. Hardcover

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ISBN 978-3-642-41466-7

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**Modern Cryptography Primer**

**Theoretical Foundations and Practical Applications**

Cryptography is an area on the edge of mathematics and practical software engineering, combining immense, challenging, unsolved mathematical problems with practical security tools currently deployed in vital data communication systems.

**Contents**

Chap. 1 Basic Concepts and Historical Overview.- Chap. 2 Mathematical Foundations of Cryptography.- Chap. 3 Foundations of Symmetric Cryptography.- Chap. 4 Foundations of Asymmetric Cryptography.- Chap. 5 An Electronic Signature and Hash Functions.- Chap. 6 PGP Systems and True Crypt.- Chap. 7 Public Key Infrastructure.- Chap. 8 Cryptographic Protocols.- Chap. 9 Cryptography Application for Data Security.- References.- Index.

**Fields of interest**

Data Structures, Cryptology and Information Theory; Systems and Data Security; e-Commerce/e-business

**Target groups**

Graduate

**Product category**

Graduate/Undergraduate textbook

**Due December 2013**

2013. XVI, 260 p. 97 illus. Hardcover

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ISBN 978-3-642-41385-8

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**Twitter Data Analytics**

This brief provides methods for harnessing Twitter data to discover solutions to complex inquiries. The brief introduces the process of collecting data through Twitter’s APIs and offers strategies for curating large datasets. The text gives examples of Twitter data with real-world examples, the present challenges and complexities of building visual analytic tools, and the best strategies to address these issues. Examples demonstrate how powerful measures can be computed using various Twitter data sources. Due to its openness in sharing data, Twitter is a prime example of social media in which researchers can verify their hypotheses, and practitioners can mine interesting patterns and build their own applications. This brief is designed to provide researchers, practitioners, project managers, as well as graduate students with an entry point to jump start their Twitter endeavors. It also serves as a convenient reference for readers seasoned in Twitter data analysis.

**Contents**

Introduction.- Crawling Twitter Data.- Storing Twitter Data.- Analyzing Twitter Data.- Visualizing Twitter Data.

**Fields of interest**

Data Mining and Knowledge Discovery; Multimedia Information Systems; User Interfaces and Human Computer Interaction

**Target groups**

Research

**Product category**

Brief

**Due November 2013**

2014. X, 87 p. 24 illus., 22 in color. (SpringerBriefs in Computer Science) Softcover

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ISBN 978-1-4614-9371-6

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**Computer Science**

B. Henderson-Sellers, University of Technology, Sydney, Broadway, NSW, Australia; J. Ralyté, University of Geneva, Carouge, Switzerland; P. Ågerfalk, Uppsala University, Uppsala, Sweden; M. Rossi, Aalto University, Aalto, Finland

C. Kościelny, Wrocław University of Applied Inf., Wrocław, Poland; M. Kurkowski, Częstochowa University of Technology, Częstochowa, Poland; M. Srebrny, Polish Academy of Sciences, Warsaw, Poland

S. Kumar, F. Morstatter, H. Liu, Arizona State University, Tempe, AZ, USA
P. Lake, P. Crowther, Sheffield Hallam University, Sheffield, UK

**Concise Guide to Databases**

**A Practical Introduction**

This easy-to-read textbook/reference presents a comprehensive introduction to databases, opening with a concise history of databases and of data as an organisational asset. As relational database management systems are no longer the only database solution, the book takes a wider view of database technology, encompassing big data, NoSQL, object and object-relational and in-memory databases. The text also examines the issues of scalability, availability, performance and security encountered when building and running a database in the real world.

**Features**

- Includes numerous examples to support the description of both business and technical issues
- Introduces a range of commercial databases and encourages the reader to experiment with these in an associated learning environment
- Presents a mixture of both theory and practical elements

**Contents**

Part I: Databases in Context.
- Data: An Organisational Asset.
- The History of Databases.
- Physical Storage and Distribution.
Part II: Database Types.
- Relational: The Start of the Modern Era in Databases.
- NoSQL: Column-Based and Document-Based Databases.
- Big Data.
- Object and Object-Relational.
- In-Memory Databases.
- Scalability.
- Availability.
- Performance.
- Security.

**Fields of Interest**

Database Management; Information Storage and Retrieval; Data Structures, Cryptology and Information Theory

**Target groups**

Upper undergraduate

**Product category**

Undergraduate textbook

W. Lawrenz, C&S group GmbH, Wolfenbüttel, Germany (Ed)

**CAN System Engineering**

**From Theory to Practical Applications**

This book addresses the various challenges and open questions relating to CAN communication networks. Opening with a short introduction into the fundamentals of CAN, the book then examines the problems and solutions for the physical layout of networks, including EMC issues and topology layout. Additionally, a discussion of quality issues with a particular focus on test techniques is presented. Each chapter features a collection of illuminating insights and detailed technical information supplied by a selection of internationally-regarded experts from industry and academia.

**Features**

- Presents thorough coverage of the architectures, implementations and applications of CAN transceivers, the data link layer and so-called higher layer software
- Explains CAN EMC characteristics and countermeasures, as well as how to design CAN networks
- Includes examples of real networks from diverse applications in automotive engineering, avionics, and home heating technology

**Contents**

CAN Basic Architectures.
- Physical Layer.
- Data Link Layer Implementation.
- Higher Level Protocols.
- Applications.
- Testing.

**Fields of interest**

Computer Systems Organization and Communication Networks; Control, Robotics, Mechatronics

**Target groups**

Research

**Product category**

Contributed volume

R. J. Lipton, Georgia Institute of Technology, Atlanta, GA, USA; K. W. Regan, The State University of New York, Buffalo, NY, USA

**People, Problems and Proofs**

**Essays from Gödel’s Lost Letter: 2010**

**Contents**

The Claimant, the Readers, and the Crowd.
- Kenneth Iverson: Notation and Thinking.
- Edmund Hillary: Proofs and Mountain Climbing.
- Michael Atiyah: The Role of Proof.
- Subhash Khot: Unique Games Conjecture.
- Arno van den Essen: An Amazing Conjecture.
- Richard Hamilton: Group Efforts.
- Grigori Perelman: A New Clay Problem.
- Eric Allender: Solvable Groups.
- Enrico Bombieri: On Intuition.
- Fred Hennie: Lower Bounds.
- Volker Strassen: Amazing Results.
- Adam Smith: Dumb Channels.
- Georg Cantor: Diagonal Method.
- Raymond Smullyan: The Reals Are Uncountable.
- Basil Rathbone: Writing a Major Result.
- Elwyn Berlekamp: Dots And Boxes.
- David Johnson: Galactic Algorithms.
- Shimon Even: A Promise Problem.
- Ryan Williams: A New Lower Bound.
- Joel Seiferas: More on the New Lower Bound.
- Victor Klee: Big Results.
- George Dantzig: Equations, Equations, and Equations.
- Srinivas Ramanujan: The Role of Amateurs.
- John Rhodes: Approaches to Problems.
- John Nash: Connections.
- Chee Yap: Computing Digits of π.
- Nina Balcan: A New Model of Complexity.
- Sam Buss: Bounded Logic.
- Anton Klyachko: Car Crashes.
- Bernard Chazelle: Natural Algorithms.
- Alfonso Bedoya: Definitions, Definitions, and Definitions.
- Hartley Rogers: Complexity Classes.
- Ron Fagin: Second Order Logic. […]

**Fields of interest**

Theory of Computation; History of Computing; Mathematics of Computing

**Target groups**

Research

**Product category**

Monograph
Physically Unclonable Functions

Constructions, Properties and Applications

Physically unclonable functions (PUFs) are innovative physical security primitives that produce unclonable and inherent instance-specific measurements of physical objects; in many ways they are the inanimate equivalent of biometrics for human beings. Since they are able to securely generate and store secrets, they allow us to bootstrap the physical implementation of an information security system.

Features
- Includes extensive overview and classification of PUF constructions, with a focus on intrinsic PUFs
- Describes algorithmic properties used to describe PUFs
- Describes a formal framework for deploying PUFs and similar physical primitives in cryptographic reductions

Contents
Chap. 1 - An Overview of Language Processing.
Chap. 2 - Corpus Processing Tools.
Chap. 3 - Encoding and Annotation Schemes.
Chap. 4 - Topics in Information Theory and Machine Learning.
Chap. 5 - Counting Words.
Chap. 6 - Words, Parts of Speech, and Morphology.
Chap. 7 - Part-of-Speech Tagging Using Rules.
Chap. 8 - Part-of-Speech Tagging Using Statistical Techniques.
Chap. 9 - Phrase-Structure Grammars in Prolog.
Chap. 10 - Partial Parsing.
Chap. 11 - Syntactic Formalisms.
Chap. 12 - Parsing Techniques.
Chap. 13 - Dependency Parsing.
Chap. 14 - Semantics and Predicate Logic.
Chap. 15 - Lexical Semantics.
Chap. 16 - Discourse.
Chap. 17 - Dialogue.

Fields of interest
Language Translation and Linguistics; Computational Linguistics; Artificial Intelligence (incl. Robotics)

Target groups
Lower undergraduate

Product category
Monograph

M. Pelillo, Ca’ Foscarì University of Venice, Venezia Mestre, Italy (ed)

Similarity-Based Pattern Analysis and Recognition

This accessible text/reference presents a coherent overview of the emerging field of non-Euclidean similarity learning. The book presents a broad range of perspectives on similarity-based pattern analysis and recognition methods, from purely theoretical challenges to practical, real-world applications.

Features
- Provides a coherent overview of the emerging field of non-Euclidean similarity learning
- Presents a broad range of perspectives on similarity-based pattern analysis and recognition methods, from purely theoretical challenges to practical, real-world applications
- Includes coverage of both supervised and unsupervised learning paradigms, as well as generative and discriminative models

Contents
Introduction: The SIMBAD Project.
SIMBAD: Emergence of Pattern Similarity.
Non-Euclidean Dissimilarities: Causes, Embedding and Informativeness.
Learning Similarities from Examples under the Evidence Accumulation Clustering Paradigm.
On the Combination of Information Theoretic Kernels with Generative Embeddings.
Geometricity and Embedding.
Structure Preserving Embedding of Dissimilarity Data.
A Game-Theoretic Approach to Pairwise Clustering and Matching.
Automated Analysis of Tissue Micro-Array Images on the Example of Renal Cell Carcinoma.
Analysis of Brain Magnetic Resonance (MR) Scans for the Diagnosis of Mental Illness.

Field of interest
Pattern Recognition

Target groups
Research

Product category
Monograph

Due December 2013
2013. XXII, 210 p. 28 illus. Hardcover
- € (D) 90,94 | € (A) 93,49 | sFr 113,50
- € 84,99 | £76.50
ISBN 978-3-642-41394-0

Due January 2014
2nd ed. 2014. XX, 645 p. (Cognitive Technologies) Hardcover
- approx. * € (D) 53,49 | € (A) 54,99 | sFr 67,00
- approx. * £ 49,99 | £44.99
ISBN 978-3-642-41463-3

Due December 2013
2014. XVI, 292 p. 64 illus., 46 in color. (Advances in Computer Vision and Pattern Recognition) Hardcover
- * € (D) 101,64 | € (A) 104,49 | sFr 126,50
- € 94,99 | £79.99
ISBN 978-1-4471-5627-7
Time and Petri Nets

At first glance the concepts of time and of Petri nets are quite contrary: while time determines the occurrences of events in a system, classic Petri nets consider their causal relationships and they represent events as concurrent systems. But if we take a closer look at how time and causality are intertwined we realize that there are many possible ways in which time and Petri nets interact. This book takes a closer look at three time-dependent Petri nets: Time Petri nets, Timed Petri nets, and Petri nets with time windows. The author first explains classic Petri nets and their fundamental properties. Then the pivotal contribution of the book is the introduction of different algorithms that allow us to analyze time-dependent Petri nets. For Time Petri nets, the author presents an algorithm that proves the behavioral equivalence of a net where time is designed once with real and once with natural numbers, so we can reduce the state space and consider the integer states exclusively.

Features

- Introduces algorithms that allow the analysis of time-dependent Petri nets
- Assumes an undergraduate level of mathematical logic
- Based on an established graduate-level course taught in Germany and France, text is supported with exercises and examples in all chapters

Contents

Chap. 1 - The Classic Petri Net.
Chap. 2 - Time Petri Nets.
Chap. 3 - Timed Petri Nets.
Chap. 4 - Petri Nets with Time Windows.

Biometric Recognition

8th Chinese Conference, CCBR 2013, Jinan, China, November 16-17, 2013, Proceedings

Features

- Up-to-date results
- State-of-the-art research
- Fast-track conference proceedings

Contents

Normalization for Unconstrained Pose-Invariant 3D Face Recognition.
An Improved Adaptive weighted LTP algorithm for Face Recognition.
Robust Face Recognition Based on Spatially-Weighted Sparse Coding.
An illumination invariant face recognition scheme to Combining Normalized Structural Descriptor with Single Scale Retinex.
Shape Constraint and Multi-Feature Fusion Particle Filter For Facial Feature Point Tracking.
LPQ based Static and Dynamic Modeling of Facial Expressions in 3D Videos.
Analysis on Features and Metrics in Face Image Retrieval System.
Weight Competitive Coding for Finger-Knuckle-Print Verification.
Identification of People at a distance Using Effective Block List.
Morphological Investigations of Skins for Sex Determination based on Sparse Principal Component Analysis.

Fields of interest

Biometrics; Pattern Recognition; Image Processing and Computer Vision

Target groups

Professional/practitioner

Product category

Monograph
New Series
Terrorism, Security, and Computation

Series editor: V. Subrahmanian

The purpose of the Computation and International Security book series is to establish the state of the art and set the course for future research in computational approaches to international security. The scope of this series is broad and aims to look at computational research that addresses topics in counter-terrorism, counter-drug, transnational crime, homeland security, cyber-crime, public policy, international conflict, and stability of nations. Computational research areas that interact with these topics include (but are not restricted to) research in databases, machine learning, data mining, planning, artificial intelligence, operations research, mathematics, network analysis, social networks, computer vision, computer security, biometrics, forecasting, and statistical modeling. The series serves as a central source of reference for information and communications technology that addresses topics related to international security. The series aims to publish thorough and cohesive studies on specific topics in international security that have a computational and/or mathematical theme, as well as works that are larger in scope than survey articles and that will contain more detailed background information. The series also provides a single point of coverage of advanced and timely topics and a forum for topics that may not have reached a level of maturity to warrant a comprehensive textbook.

V. Subrahmanian, A. Mannes, University of Maryland, College Park, MD, USA; A. Rou, Society for the Study of Peace and Conflict, Dwarka, India; R. Raghavan, Central Bureau of Investigation, Alwarpet, Chennai, India

Indian Mujahideen
Computational Analysis and Public Policy

Advance Praise for Indian Mujahideen: Computational Analysis and Public Policy “This book presents a highly innovative computational approach to analyzing the strategic behavior of terrorist groups and formulating counter-terrorism policies.

Features
► Detailed study of the Indian Mujahideen (IM) group using modern computational analysis techniques ► Explains how big data can improve counter-terrorism policies ► Authored by a team of policy analysts, computer scientists, and law enforcement experts

Contents

Fields of interest
Data Mining and Knowledge Discovery; Political Science, general; Criminology & Criminal Justice

Target groups
Professional/practitioner

Product category
Monograph

Due November 2013

2013. XVIII, 173 p. 22 illus. (Terrorism, Security, and Computation) Hardcover
► * € (D) 90,94 | € (A) 93,49 | sFr 113,50
► € 84,99 | £76.50
ISBN 978-3-319-02817-0

Available

2013. XII, 569 p. 121 illus. (Lecture Notes in Computer Science / Theoretical Computer Science and General Issues, Volume 8000) Softcover
► * € (D) 74,90 | € (A) 77,00 | sFr 93,50
► € 70,00 | £63.99
ISBN 978-3-642-41659-0

In Search of Elegance in the Theory and Practice of Computation

Essays dedicated to Peter Buneman

Contents
R. Venturini, University of Pisa, Pisa, Italy

**Compressed Data Structures for Strings**

**On Searching and Extracting Strings from Compressed Textual Data**

Data compression is mandatory to manage massive datasets, indexing is fundamental to query them. However, their goals appear as counterposed: the former aims at minimizing data redundancies, whereas the latter augments the dataset with auxiliary information to speed up the query resolution. In this monograph we introduce solutions that overcome this dichotomy. We start by presenting the use of optimization techniques to improve the compression of classical data compression algorithms, then we move to the design of compressed data structures providing fast random access or efficient pattern matching queries on the compressed dataset. These theoretical studies are supported by experimental evidences of their impact in practical scenarios.

**Features**

- Presents new results to improve data compression by solving optimization problems
- Presents efficient solutions to pattern matching problems in compressed space
- Nice balance of theoretical achievements and algorithm-engineering results for compressed data structures

**Contents**


**Field of interest**

Arithmetic and Logic Structures

**Target groups**

Research

**Product category**

Monograph

S. Yu, Deakin University, Melbourne, VIC, Australia

**Distributed Denial of Service Attack and Defense**

This brief provides readers a complete and self-contained resource for information about DDoS attacks and how to defend against them. It presents the latest developments in this increasingly crucial field along with background context and survey material. The book also supplies an overview of DDoS attack issues, DDoS attack detection methods, DDoS attack source traceback, and details on how hackers organize DDoS attacks. The author concludes with future directions of the field, including the impact of DDoS attacks on cloud computing and cloud technology. The concise yet comprehensive nature of this brief makes it an ideal reference for researchers and professionals studying DDoS attacks. It is also a useful resource for graduate students interested in cyberterrorism and networking.

**Contents**


**Fields of interest**

Systems and Data Security; Computer Communication Networks; Information Systems Applications (incl.Internet)

**Target groups**

Research

**Product category**

Brief