Semantic Analysis and Understanding of Human Behavior in Video Streaming

Semantic Analysis and Understanding of Human Behavior in Video Streaming investigates the semantic analysis of the human behaviour captured by video streaming, and introduces both theoretical and technological points of view. Video analysis based on the semantic content is in fact still an open issue for the computer vision research community, especially when real-time analysis of complex scenes is concerned. This book explores an innovative, original approach to human behaviour analysis and understanding by using the syntactical symbolic analysis of images and video streaming described by means of strings of symbols. A symbol is associated to each area of the analyzed scene. When a moving object enters an area, the corresponding symbol is appended to the string describing the motion. This approach allows for characterizing the motion of a moving object with a word composed by symbols. By studying and classifying these words we can categorize and understand the various behaviours.

Contents

Fields of interests
Image Processing and Computer Vision; Multimedia Information Systems; User Interfaces and Human Computer Interaction

Target groups
Professional/practitioner

Discount group
Professional Non-Medical

Intrinsically Motivated Learning in Natural and Artificial Systems


Fields of interests
Artificial Intelligence (incl. Robotics); Cognitive Psychology; Control, Robotics, Mechatronics

Target groups
Research

Discount group
Professional Non-Medical

Available
2012.XX, 453 p. 170 illus. (Lecture Notes in Computer Science / Information Systems and Applications, incl. Internet/Web, and HCI, Volume 7200) Softcover
➤ $95.00
ISBN 978-3-642-31738-5

Due November 2012
2012.X, 470 p. 97 illus., 66 in color. Hardcover
➤ $149.00
ISBN 978-3-642-32374-4
M. Bestehorn, Landis+Gyr, Fehraltorf, Switzerland

Querying Moving Objects Detected by Sensor Networks

Declarative query interfaces to Sensor Networks (SN) have become a commodity. These interfaces allow access to SN deployed for collecting data using relational queries. However, SN are not confined to data collection, but may track object movement, e.g., wildlife observation or traffic monitoring. While rational approaches are well suited for data collection, research on Moving Object Databases (MOD) has shown that relational operators are unsuitable to express information needs on object movement, i.e., spatio-temporal queries. Querying Moving Objects Detected by Sensor Networks studies declarative access to SN that track moving objects. The properties of SN present a straightforward application of MOD, e.g., node failures, limited detection ranges and accuracy which vary over time etc. Furthermore, point sets used to model MOD-entities like regions assume the availability of very accurate point sets used to model MOD-entities like regions assume the availability of very accurate knowledge regarding the spatial extend of these entities, assuming such knowledge is unrealistic for most SN. This book is the first that defines a complete set of spatio-temporal operators for SN while taking into account their properties. Based on these operators, we systematically investigate how to derive query results from object detections by SN.

Contents

Fields of interests
Computer Imaging, Vision, Pattern Recognition and Graphics; Artificial Intelligence (incl. Robotics); Communications Engineering, Networks

Target groups
Research

Discount group
Professional Non-Medical

Due September 2012
2013. X, 80 p. 23 illus. (SpringerBriefs in Computer Science) Softcover
► $39.95

M. Chemuturi, Chemuturi Consultants

Requirements Engineering and Management for Software Development Projects

Requirements Engineering and Management for Software Development Projects presents a complete guide on requirements for software development including engineering, computer science and management activities. It is the first book to cover all aspects of requirements management in software development projects.

Features
► The first book that covers all aspects of requirements management in software development projects
► Presents the best practices and pitfalls in software engineering requirements and management in one place
► Explains in detail the metrics used for efficient software requirements management

Contents

Fields of interests
Software Engineering; Engineering, general; System Performance and Evaluation

Target groups
Professional/practitioner

Discount group
Professional Non-Medical

Due September 2012
2013. XVII, 282 p. 20 illus. Hardcover
► approx. $109.00

R. P.-Y. Chiang, Shin Kong Memorial Hospital, Fu Jen Catholic University, Taipei, Taiwan; S.-C. Kang, National Taiwan University, Taipei, Taiwan (Eds)

Introduction to Modern Sleep Technology

Contents
**Pattern Recognition and Classification**

**An Introduction**

**Contents**
Preface.- Acknowledgments.- Chapter 1 Introduction.- 1.1 Overview.- 1.2 Classification.- 1.3 Organization of the Book.- Bibliography.- Exercises.- Chapter 2 Classification.- 2.1 The Classification Process.- 2.2 Features.- 2.3 Training and Learning.- 2.4 Supervised Learning and Algorithm Selection.- 2.5 Approaches to Classification.- 2.6 Examples.- 2.6.1 Classification by Shape.- 2.6.2 Classification by Size.- 2.6.3 More Examples.- 2.6.4 Classification of Letters.- Bibliography.- Exercises.- Chapter 3 Non-Metric Methods.- 3.1 Introduction.- 3.2 Decision Tree Classifier.- 3.2.1 Information, Entropy and Impurity.- 3.2.2 Information Gain.- 3.2.3 Decision Tree Issues.- 3.2.4 Strengths and Weaknesses.- 3.3 Rule-Based Classifier.- 3.4 Other Methods.- Bibliography.- Exercises.- Chapter 4 Statistical Pattern Recognition.- 4.1 Measured Data and Measurement Errors.- 4.2 Probability Theory.- 4.2.1 Simple Probability Theory.- 4.2.2 Conditional Probability and Bayes' Rule.- 4.2.3 Naïve Bayes classifier.- 4.3 Continuous Random Variables.- 4.3.1 The Multivariate Gaussian.- 4.3.2 The Covariance Matrix.- 4.3.3 The Mahalanobis Distance.- Bibliography.- Exercises.- Chapter 5 Supervised Learning.- 5.1 Parametric and Non-Parametric Learning.- 5.2 Parametric Learning.- 5.2.1 Bayesian Decision Theory.- 5.2.2 Discriminant Functions and Decision Boundaries.- 5.2.3 MAP (Maximum A Posteriori) Estimator.- Bibliography.- Exercises.- Chapter 6 Non-Parametric Learning.- 6.1 Histogram Estimator and Parzen Windows. [...]
J. Fürnkranz, TU Darmstadt, Darmstadt, Germany; D. Gamberger, R. Boškovic Institute, Zagreb, Croatia; N. Lavrač, J. Stefan Institute, Ljubljana, Slovenia

Foundations of Rule Learning

Rules – the clearest, most explored and best understood form of knowledge representation – are particularly important for data mining, as they offer the best tradeoff between human and machine understandability. This book presents the fundamentals of rule learning as investigated in classical machine learning and modern data mining. It introduces a feature-based view, as a unifying framework for propositional and relational rule learning, thus bridging the gap between attribute-value learning and inductive logic programming, and providing complete coverage of most important elements of rule learning. The book can be used as a textbook for teaching machine learning, as well as a comprehensive reference to research in the field of inductive rule learning.

Features
▶ Fills a significant gap in the machine learning literature ▶ Explains the most comprehensive knowledge representation formalism ▶ Offers researchers and graduate students a clear unifying terminology

Contents

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

Target groups
Research

Discount group
Professional Non-Medical

J. Gibbons, Oxford University, UK (Ed)

Generic and Indexed Programming


Generic programming is about making programs more widely applicable via exotic kinds of parameterization— not just along the dimensions of values or of types, but also of things such as the shape of data, algebraic structures, strategies, computational paradigms, and so on. Indexed programming is a lightweight form of dependently typed programming, constraining flexibility by allowing one to state and check relationships between parameters: that the shapes of two arguments agree, that an encoded value matches some type, that values transmitted along a channel conform to the stated protocol, and so on. The two forces of generality and indexing balance each other nicely, simultaneously promoting and controlling generality.

Features
▶ Tutorial volume ▶ Aims at doctoral students, researchers, and practitioners in programming languages and related areas ▶ Covers various aspects of generic and indexed programming

Contents

Fields of interests
Programming Languages, Compilers, Interpreters; Programming Techniques; Software Engineering

Target groups
Research

Discount group
Professional Non-Medical

M. González Hidalgo, A. Mir Torres, J. Varona Gómez, University of the Balearic Islands, Palma de Mallorca, Spain (Eds)

Deformation Models

Tracking, Animation and Applications

Contents

Fields of interests
Computer Imaging, Vision, Pattern Recognition and Graphics; Signal, Image and Speech Processing; Biomedical Engineering

Target groups
Research

Discount group
Professional Non-Medical
Dynamic Cloud Collaboration Platform

A Market-Oriented Approach

Present trends in cloud providers (CPs) capabilities have given rise to the interest in federating or collaborating clouds, thus allowing providers to revel on an increased scale and reach more than that is achievable individually. Current research efforts in this context mainly focus on building supply chain collaboration (SCC) models, in which CPs leverage cloud services from other CPs for seamless provisioning. Nevertheless, in the near future, we can expect that hundreds of CPs will compete to offer services and thousands of users will also compete to receive the services to run their complex heterogeneous applications on a cloud computing environment. In this open federation scenario, existing collaboration models (i.e. SCC) are not applicable since they are designed for static environments where a-priori agreements among the parties are needed to establish the federation. To move beyond these shortcomings, Dynamic Cloud Collaboration Platform establishes the basis for developing dynamic, advanced and efficient collaborative cloud service solutions that are scalable, high performance, and cost effective.

Contents

Fields of interest
Computer Communication Networks; Communications Engineering, Networks

Target groups
Professional/practitioner

Discount group
Professional Non-Medical

Believable Bots

Can Computers Play Like People?

We share our modern world with bots – chatbots to converse with, roombots to clean our houses, spambots to fill our e-mail inboxes, and medibots to assist our surgeons. This book is about computer game bots, virtual companions who accompany us in virtual worlds or sharpen our fighting skills.

Features
- Describes many details of state-of-the-art games
- Addresses significant artificial intelligence issues
- Interesting for games developers and academic researchers

Contents

Fields of interest
Artificial Intelligence (incl. Robotics); Computational Intelligence; Personality and Social Psychology

Target groups
Research

Discount group
Professional Non-Medical
Guide to Computer Network Security

Contents

Fields of interests
Information Storage and Retrieval; Data Storage Representation; Management of Computing and Information Systems

Target groups
Lower undergraduate

Discount group
Professional Non-Medical

Structured Peer-to-Peer Systems
Fundamentals of Hierarchical Organization, Routing, Scaling, and Security

The field of structured P2P systems has seen fast growth upon the introduction of Distributed Hash Tables (DHTs) in the early 2000s. The first proposals, including Chord, Pastry, Tapestry, were gradually improved to cope with scalability, locality and security issues. By utilizing the processing and bandwidth resources of end users, the P2P approach enables high performance of data distribution which is hard to achieve with traditional client-server architectures.

Features
- Covers fundamental issues in organization, optimization, and tradeoffs of present large-scale structured P2P systems
- Highlights P2P applications in the modern Internet
- Presents ranking and fairness mechanisms, look-ahead routing, analytical modeling and simulation methods, and security aspects in P2P systems

Contents

Fields of interests
Computer Communication Networks; Systems and Data Security; Communications Engineering; Networks

Target groups
Research

Discount group
Professional Non-Medical

Energy-Efficient High Performance Computing Measurement and Tuning

In this work, the unique power measurement capabilities of the Cray XT architecture were exploited to gain an understanding of power and energy use, and the effects of tuning both CPU and network bandwidth. Modifications were made to deterministically halt cores when idle. Additionally, capabilities were added to alter operating P-state.

Features
- Examines the power requirements of a range of important DOE/NNSA production scientific computing applications running at large scale
- Demonstrates how CPU and network bandwidth tuning can result in energy savings with little or no impact on run-time performance
- Discusses how next-generation large-scale platforms could benefit from the capability to tune platform components to achieve more energy-efficient performance

Contents

Fields of interests
Computer Communication Networks; Performance and Reliability; Operating Systems

Target groups
Research

Discount group
Professional Non-Medical
Facebook Nation

Total Information Awareness

President Barack Obama, in his 2011 State of the Union Address, called America “the nation of Edison and the Wright brothers” and “of Google and Facebook.” U.S. Chief Information Officer, Steven VanRoekel, said that America has become a “Facebook nation” that demands increased transparency and interactivity from the federal government.

Features

➤ Presents an insider’s perspective of Total Information Awareness, a governmental data mining project focused on scanning public and private data for the sake of national security. ➤ Closely examines how the rise of social media platforms, such as Facebook, has inadvertently led to the general public’s embrace of Total Information Awareness ➤ Analyzes the privacy concerns with posting personal data on social media platforms, and explains how personal Total Information Awareness can benefit individuals, as well as Society as a whole.

Contents

From 1984 to Total Information Awareness. - Social Networks and Privacy. - Smartphones and Privacy. - Consumer Privacy in the Age of Big Data. - Twitter – A World of Immediacy. - Generation C in the Age of Big Data. - Privacy Breaches. - Business Intelligence. - Misinformation and Disinformation. - E-Government and E-Activism. - Living in Facebook Nation. - Personal Information Management. - Total Information Awareness. - From Total Information Awareness to 1984. - Facebook Timeline. - Index.

Fields of interests

Information Systems Applications (incl. Internet); Media Research; Multimedia Information Systems

Target groups

Professional/practitioner

Discount group

Professional Non-Medical

Due September 2012

➤ $99.00
Soft Computing Approach to Pattern Classification and Object Recognition

A Unified Concept

Soft Computing Approach to Pattern Classification and Object Recognition establishes an innovative, unified approach to supervised pattern classification and model-based occluded object recognition.

Features

- Outlines a unified approach to supervised pattern classification and model-based occluded object recognition
- Presents an innovative, new interpretation of multidimensional fuzzy implication (MFI) and fuzzy pattern vector (FPV)
- Provides a detailed guide to a completely independent design methodology, developed and tested on a unified framework

Contents

- Soft Computing Approach to Pattern Classification and Object Recognition
- Pattern Classification Based on Conventional Interpretation of MFI
- Pattern Classification Based on New Interpretation of MFI
- Knowledge-Based Occluded Object Recognition Based on New Interpretation of MFI and Floating Point Genetic Algorithm
- Neuro-genetic Approach to Occluded Object Recognition Based on the New Interpretation of MFI

Fields of interests

Image Processing and Computer Vision; Signal, Image and Speech Processing; Artificial Intelligence (incl. Robotics)

Target groups

Research

Discount group

Professional Non-Medical
Handbook of Computational Approaches to Counterterrorism

Terrorist groups throughout the world have been studied primarily through the use of social science methods. However, major advances in IT during the past decade have led to significant new ways of studying terrorist groups, making forecasts, learning models of their behaviour, and shaping policies about their behaviour. Handbook of Computational Approaches to Counterterrorism provides the first in-depth look at how advanced mathematics and modern computing technology is shaping the study of terrorist groups.

**Features**
- The first handbook that brings together a wide variety of computational techniques (and authors spanning multiple disciplines related to counter-terrorism research) in a single, definitive, reference work
- A website with additional material relating to book chapters will be available
- Includes case studies explaining how various techniques proposed in this book are applicable to real-world counter-terrorism and conflict analysis

**Contents**
- Data and Data Acquisition
- Behavioral Models and Forecasting
- Terrorist Network Analysis
- Systems, Frameworks, and Case Studies
- New Directions

**Fields of interests**
- Artificial Intelligence (incl. Robotics)
- Probability and Statistics in Computer Science
- Data Mining and Knowledge Discovery

**Target groups**
- Professional/practitioner

**Discount group**
- Professional Non-Medical

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Automatic Malware Analysis
An Emulator Based Approach

Malicious software (i.e., malware) has become a severe threat to interconnected computer systems for decades and has caused billions of dollars damages each year. A large volume of new malware samples are discovered daily. Even worse, malware is rapidly evolving becoming more sophisticated and evasive to strike against current malware analysis and defense systems. Automatic Malware Analysis presents a virtualized malware analysis framework that addresses common challenges in malware analysis. In regards to this new analysis framework, a series of analysis techniques for automatic malware analysis is developed. These techniques capture intrinsic characteristics of malware, and are well suited for dealing with new malware samples and attack mechanisms.

**Contents**
- Introduction
- Dynamic Binary Analysis Platform
- Hidden Code Extraction
- Privacy-breaching Behavior Analysis
- Hooking Behavior Analysis
- Analysis of Trigger Conditions and Hidden Behaviors
- Concluding Remarks

**Fields of interests**
- Systems and Data Security
- Data Encryption
- Data Structures, Cryptology and Information Theory

**Target groups**
- Research

**Discount group**
- Professional Non-Medical

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Guide to Modeling and Simulation of Systems of Systems
User's Reference

This user’s reference is a companion to the separate book also titled “Guide to Modelling and Simulation of Systems of Systems.” The principal book explicates integrated development environments to support virtual building and testing of systems of systems, covering in some depth the MS4 Modelling Environment”. This user’s reference provides a quick reference and exposition of the various concepts and functional features covered in that book. The topics in the user’s reference are grouped in alignment with the workflow displayed on the MS4 Modeling Environment™ launch page, under the headings Atomic Models, System Entity Structure, Pruning SES, and Miscellaneous. For each feature, the reference discusses why we use it, when we should use it, and how to use it. Further comments and links to related features are also included.

**Features**
- Supplements the separate book also titled “Guide to Modeling and Simulation of Systems of Systems”
- Provides a quick reference and exposition of various concepts related to integrated development environments to support virtual building and testing of systems of systems
- Discusses why, when, and how the statements in the model development language should be used

**Contents**
- Atomic Models List
- System Entity Structure List
- Pruning SES List
- Miscellaneous List

**Fields of interest**
- Simulation and Modeling

**Target groups**
- Research

**Discount group**
- Professional Non-Medical