Computer Vision and Action Recognition
A Guide for Image Processing and Computer Vision Community for Action Understanding

Human action analyses and recognition are challenging problems due to large variations in human motion and appearance, camera viewpoint and environment settings. The field of action and activity representation and recognition is relatively old, yet not well-understood by the students and research community. Some important but common motion recognition problems are even now unsolved properly by the computer vision community.

Features
- No other book is available that covers action recognition in a comprehensive manner in the arena of computer vision
- Both students, who have basic knowledge on image processing, and researchers can use this book for their academic learning and research purposes
- This book can be used as a text book for level-2 students who have studied basic image processing already in earlier session – both for undergraduate and graduate students
- The book will cover all state-of-the-art methods on recognition approaches and guide one on how to move forward in the field

Contents

Fields of interests
Computer Imaging, Vision, Pattern Recognition and Graphics; Image Processing and Computer Vision; Pattern Recognition

Target groups
Research

Product category
Monograph

Due January 2012
2011. XIX, 217 p. 48 illus., 38 in color. (Atlantis Ambient and Pervasive Intelligence, Volume 5)
Hardcover
► $99.00

Collaborative Financial Infrastructure Protection
Tools, Abstractions, and Middleware

The Critical Infrastructure Protection Survey recently released by Symantec found that 53% of interviewed IT security experts from international companies experienced at least ten cyber attacks in the last five years, and financial institutions were often subject to some of the most sophisticated and large-scale cyber attacks and frauds. The book by Baldoni and Chockler analyzes the structure of software infrastructures found in the financial domain, their vulnerabilities to cyber attacks and the existing protection mechanisms.

Features
- First comprehensive vulnerability analysis of financial information systems
- Presents a novel approach to protecting critical IT infrastructures from cyber attacks
- Combines theoretical analysis with application development and concrete usage scenarios

Contents

Fields of interests
Computer Communication Networks; Systems and Data Security; Business Information Systems

Target groups
Research

Product category
Monograph

Due February 2012
2012. XXIV, 188 p. 48 illus. Hardcover
► $99.00
ISBN 978-3-642-20419-7

High-Performance Scientific Computing
Algorithms and Applications

Contents

Fields of interests
Numeric Computing; Information Storage and Retrieval; Math Applications in Computer Science

Target groups
Research

Product category
Contributed volume

Due February 2012
2012. XVI, 272 p. 108 illus. Hardcover
► $99.00
ISBN 978-1-4471-2436-8

Due February 2012
2012. XVI, 272 p. 108 illus. Hardcover
► $99.00
ISBN 978-1-4471-2436-8
Structure Discovery in Natural Language
Foreword by: A. v. Bosch, Radboud University, Nijmegen, The Netherlands

Current language technology is dominated by approaches that either enumerate a large set of rules, or are focused on a large amount of manually labelled data. The creation of both is time-consuming and expensive, which is commonly thought to be the reason why automated natural language understanding has still not made its way into "real-life" applications yet. This book sets an ambitious goal: to shift the development of language processing systems to a much more automated setting than previous works. A new approach is defined: what if computers analysed large samples of language data on their own, identifying structural regularities that perform the necessary abstractions and generalisations in order to better understand language in the process?

Contents

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

Target groups
Graduate

Product category
Monograph

Guide to Reliable Distributed Systems
Building High-Assurance Applications and Cloud-Hosted Services

K. P. Birman, Cornell University, Ithaca, NY, USA

Features
► Describes the key concepts, principles and implementation options for creating high-assurance cloud computing solutions ► Written in a clear, easy-to-understand style, with concrete examples drawn from real-world settings ► Includes more than 80 problems at varying levels of difficulty

Contents

Fields of interest
Computer System Implementation; Operating Systems; Information Systems Applications (incl. Internet)

Target groups
Professional/practitioner

Product category
Graduate/Advanced undergraduate textbook

Due December 2011

2012. XX, 179 p. 74 illus. (Theory and Applications of Natural Language Processing) Hardcover
► $99.00
ISBN 978-3-642-25922-7

Due January 2012

2012. XXII, 770 p. 139 illus. (Texts in Computer Science) Hardcover
► $89.95

Due December 2011

2011. VIII, 426 p. 23 illus., 3 in color. Hardcover
► $99.00

Computer Science

The Hardware, Software and Heart of It

E. K. Blum, University of Southern California, Los Angeles, CA, USA; A. V. Aho, Columbia University, New York, NY, USA (Eds)

Computer Science: The Hardware, Software and Heart of It focuses on the deeper aspects of the two recognized subdivisions of Computer Science, Software and Hardware. These subdivisions are shown to be closely interrelated as a result of the stored-program concept.

Features
► Includes a survey and technical critique of computer science with non-mathematical explanations and sufficient technical explanations to satisfy computer scientists and engineers ► Covers a new kind of computer programming for parallel/distributed computing using the message-passing paradigm which is at the heart of large clusters of computers ► Treats the dual character of computer science as both a hardware and software discipline by providing several examples

Contents

Fields of interest
Software Engineering; Theory of Computation; Mathematical Logic and Formal Languages

Target groups
Professional/practitioner

Product category
Professional book
Y. Cai, South China University of Technology, Guangzhou, China; C.-m. Au Yeung, Hong Kong Applied Science and Technology Research Institute, China; H.-f. Leung, The Chinese University of Hong Kong, China

**Fuzzy Computational Ontologies in Contexts**

**Formal Models of Knowledge Representation with Membership Degree and Typicality of Objects, and Their Applications**


**Features**
- First attempt to incorporate object membership and typicality in computational ontologies
- Application in recommender systems
- Multiple illustrating examples

**Contents**
- Introduction.
- Part I Introduction to Web of Data.
- Topology of the Web of Data.
- Storing and Indexing Massive RDF Data Sets.
- Designing Exploratory Search Applications upon Web Data Sources.
- Part II Search over the Web.
- Path-oriented Keyword Search query over RDF.
- Interactive Query Construction for Keyword Search on the SemanticWeb.
- Understanding the Semantics of Keyword Queries on Relational Data Without Accessing the Index.
- Keyword-Based Search over Semantic Data.
- Semantic Link Discovery over Relational Data.
- Embracing Uncertainty in Entity Linking.
- The Return of the Entity-Relationship Model: Ontological Query Answering.
- Linked Data Services and Semantics-enabled Mashup.
- Part III Linked Data Search engines.
- A Recommender System for Linked Data.
- Flint: from Web Pages to Probabilistic Semantic Data.
- Searching and Browsing Linked Data with SWSE.

**Fields of interest**
- Information Storage and Retrieval; Artificial Intelligence (incl. Robotics); Symbolic and Algebraic Manipulation; Information Systems Applications (incl. Internet)

**Target groups**
- Research

**Product category**
- Monograph

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R. De Virgilio, Roma Tre University, Italy; F. Guerra, University of Modena and Reggio Emilia, Italy; Y. Velegrakis, University of Trento, Italy (Eds)

**Semantic Search over the Web**

The Web has become the world’s largest database, with search being the main tool that allows organizations and individuals to exploit its huge amount of information. Search on the Web has been traditionally based on textual and structural similarities, ignoring to a large degree the semantic dimension, i.e., understanding the meaning of the query and of the document content.

**Features**
- First survey text on a hot new topic
- Uniquely combines database and Semantic Web technologies
- Explains basic technologies for novel Web-based applications

**Contents**
- Introduction.
- Part I Introduction to Web of Data.
- Topology of the Web of Data.
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- Designing Exploratory Search Applications upon Web Data Sources.
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- Path-oriented Keyword Search query over RDF.
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- Understanding the Semantics of Keyword Queries on Relational Data Without Accessing the Index.
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- A Recommender System for Linked Data.
- Flint: from Web Pages to Probabilistic Semantic Data.
- Searching and Browsing Linked Data with SWSE.

**Fields of interest**
- Information Storage and Retrieval; Artificial Intelligence (incl. Robotics)

**Target groups**
- Research

**Product category**
- Monograph

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T. Downey, Florida International University, Miami, FL, USA

**Guide to Web Development with Java**

**Understanding Website Creation**

This comprehensive textbook introduces readers to the three-tiered, Model-View-Controller (MVC) architecture by using Hibernate, JSPs, and Java Servlets. These three technologies all use Java, so that a student with a background in programming will be able to master them with ease, with the end result of being able to create web applications that use MVC, validate user input and save data to a database.

**Features**
- With an accessible, easy-to-follow style
- Uses powerful technologies that are freely available on the web to speed up web development
- Contains questions and exercises at the end of each chapter, detailed illustrations, chapter summaries, and a glossary

**Contents**
- Browser - Server Communication - Controllers - Java Beans and Controller Helpers - Enhancing the Controller - Hibernate - Advanced HTML and Form Elements - Accounts, Cookies and Carts - Web Services and Legacy Databases

**Fields of interest**
- Information Systems Applications (incl. Internet)

**Target groups**
- Lower undergraduate

**Product category**
- Undergraduate textbook
A. A. Gosh tasby, Wright State University, Dayton, OH, USA

**Image Registration**

**Principles, Tools and Methods**

This book presents a thorough and detailed guide to image registration, outlining the principles and reviewing state-of-the-art tools and methods. The book begins by identifying the components of a general image registration system, and then describes the design of each component using various image analysis tools. The text reviews a vast array of tools and methods, not only describing the principles behind each tool and method, but also measuring and comparing their performances using synthetic and real data.

**Features**

- Reviews a vast array of tools and methods, describing the underlying principles and comparing their performances.
- Includes a glossary, an extensive list of references, and an appendix on principal component analysis.
- Provides supplementary images and data in an associated website.

**Contents**


**Fields of interests**

Image Processing and Computer Vision; Pattern Recognition

**Target groups**

Research

**Product category**

Monograph

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**Due March 2012**

2012. XVIII, 466 p. 194 illus., 61 in color. (Advances in Computer Vision and Pattern Recognition) Hardcover

- $129.00


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**Due November 2011**

2011. XII, 400 p. 182 illus., 66 in color. Hardcover

- $129.00

ISBN 978-3-642-23070-7

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**Due February 2012**

2012. X, 390 p. 150 illus., 130 in color. (Lecture Notes in Computational Science and Engineering, Volume 86) Hardcover

- $124.00

ISBN 978-3-642-27176-2

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**Microelectronic Systems**

**Circuits, Systems and Applications**

Editorial coordination: J. Heppner, K. Kirsch, Fraunhofer-Institute, Erlangen, Germany

This book is dedicated to Prof. Dr. Heinz Gerhäuser on the occasion of his retirement both from the position of Executive Director of the Fraunhofer Institute for Integrated Circuits IIS and from the Endowed Chair of Information Technologies with a Focus on Communication Electronics (LIKE) at the Friedrich-Alexander-Universität Erlangen-Nürnberg. Heinz Gerhäuser’s vision and entrepreneurial spirit have made the Fraunhofer IIS one of the most successful and renowned German research institutions. He has been Director of the Fraunhofer IIS since 1993, and under his leadership it has grown to become the largest of Germany’s 60 Fraunhofer Institutes, a position it retains to this day, currently employing over 730 staff. Likely his most important scientific as well as application-related contribution was his pivotal role in the development of the mp3 format, which would later become a worldwide success. The contributions to this Festschrift were written by both Fraunhofer IIS staff and external project team members in appreciation of Prof. Dr. Gerhäuser’s lifetime academic achievements and his inspiring leadership at the Fraunhofer IIS.

**Feature**

- Dedicated to Prof. Dr. Heinz Gerhäuser on the occasion of his retirement

**Fields of interests**

Special Purpose and Application-Based Systems; Circuits and Systems; Computer System Implementation

**Target groups**

Research

**Product category**

Monograph
Glazed Panel Construction with Human-Robot Cooperation

These days, construction companies are beginning to be concerned about a potential labor shortage by demographic changes and an aging construction work force. Also, an improvement in construction safety could not only reduce accidents but also decrease the cost of the construction, and is therefore one of the imperative goals of the construction industry. These challenges correspond to the potential for Automation and Robotics in Construction as one of solutions. Almost half of construction work is said to be material handling and materials used for construction are heavy and bulky for humans. To date, various types of robots have been developed for glazed panel construction. Through the case studies on construction, to which the robots were applied, however, we identified difficulties to be overcome. In this study, a human-robot cooperative system is deduced as one approach to surmount these difficulties; then, considerations on interactions among the operator, robot and environment are applied to design of the system controller.

Contents

Fields of interests
Artificial Intelligence (incl. Robotics); Mechanical Engineering

Target groups
Professional/practitioner

Product category
Brief

Advanced Methods in Computer Graphics
With examples in OpenGL

This book brings together several advanced topics in computer graphics that are important in the areas of game development, three-dimensional animation and real-time rendering. The book is designed for final-year undergraduate or first-year graduate students, who are already familiar with the basic concepts in computer graphics and programming. It aims to provide a good foundation of advanced methods such as skeletal animation, quaternions, mesh processing and collision detection. These and other methods covered in the book are fundamental to the development of algorithms used in commercial applications as well as research.

Features
► Introduces a wide range of methods in advanced graphics that prepares students for research projects ► Emphasizes the conceptual framework and application oriented details so that the reader understands why, where and how each method is used ► Provides code examples using OpenGL that not only help understand the implementation aspects but also motivate the reader to try new applications

Contents

Fields of interest
Computer Graphics

Target groups
Graduate

Product category
Graduate/Advanced undergraduate textbook

Semantic Web Services for Web Databases

Semantic Web Services for Web Databases introduces an end-to-end framework for querying Web databases using novel Web service querying techniques. This includes a detailed framework for the query infrastructure for Web databases and services. Case studies are covered in the last section of this book. Semantic Web Services For Web Databases is designed for practitioners and researchers focused on service-oriented computing and Web databases.

Features
► Describes the issues and solutions to efficiently query Web databases and services on the semantic Web ► Includes detailed framework for the query infrastructure for Web databases and services ► Includes case studies

Contents

Fields of interests
Database Management; Information Systems Applications (incl.Internet); Artificial Intelligence (incl. Robotics)

Target groups
Professional/practitioner

Product category
Professional book
Due February 2012

2012. XIX, 436 p. 178 illus., 109 in color. Hardcover
▶ $99.00
ISBN 978-1-4471-2478-8

Markov Decision Processes and the Belief-Desire-Intention Model

Bridging the Gap for Autonomous Agents

In this work, we provide a treatment of the relationship between two models that have been widely used in the implementation of autonomous agents: the Belief Desire Intention (BDI) model and Markov Decision Processes (MDPs). We start with an informal description of the relationship, identifying the common features of the two approaches and the differences between them. Then we hone our understanding of these differences through an empirical analysis of the performance of both models on the TileWorld testbed. This allows us to show that even though the MDP model displays consistently better behavior than the BDI model for small worlds, this is not the case when the world becomes large and the MDP model cannot be solved exactly. Finally we present a theoretical analysis of the relationship between the two approaches, identifying mappings that allow us to extract a set of intentions from a policy (a solution to an MDP), and to extract a policy from a set of intentions.

Contents

Fields of interests
Artificial Intelligence (incl. Robotics); Simulation and Modeling

Target groups
Professional/practitioner

Product category
Brief

Transactions on High-Performance Embedded Architectures and Compilers IV

Contents
Ontology Engineering in a Networked World

Contents

Fields of interests
Artificial Intelligence (incl. Robotics); Information Storage and Retrieval; Mathematical Logic and Formal Languages

Target groups
Upper undergraduate

Product category
Graduate/Advanced undergraduate textbook

Due January 2012
► $79.95
ISBN 978-3-642-24793-4

Service Placement in Ad Hoc Networks

Service provisioning in ad hoc networks is challenging given the difficulties of communicating over a wireless channel and the potential heterogeneity and mobility of the devices that form the network. Service placement is the process of selecting an optimal set of nodes to host the implementation of a service in light of a given service demand and network topology. The key advantage of active service placement in ad hoc networks is that it allows for the service configuration to be adapted continuously at run time. Service Placement in Ad Hoc Networks proposes the SPI service placement framework as a novel approach to service placement in ad hoc networks. The SPI framework takes advantage of the interdependencies between service placement, service discovery and the routing of service requests to minimize signaling overhead. The work also proposes the Graph Cost / Single Instance and the Graph Cost / Multiple Instances placement algorithms.

Features
► Describes a SPI service placement framework as a novel approach to service placement in ad hoc networks ► Proposes the Graph Cost / Single Instance and the Graph Cost / Multiple Instances placement algorithms ► Examines the properties of this approach to service placement and compares it with other recent proposals

Contents

Fields of interest
System Performance and Evaluation

Target groups
Research

Product category
Brief

Due December 2011
2012. IX, 116 p. 28 illus. (SpringerBriefs in Computer Science) Softcover
► $39.95
ISBN 978-1-4471-2362-0

Incomplete Information System and Rough Set Theory

Models and Attribute Reductions

“Incomplete Information System and Rough Set Theory: Models and Attribute Reductions” covers theoretical study of generalizations of rough set model in various incomplete information systems. It discusses not only the regular attributes but also the criteria in the incomplete information systems. Based on different types of rough set models, the book presents the practical approaches to compute several reducts in terms of these models. The book is intended for researchers and postgraduate students in machine learning, data mining and knowledge discovery, especially for those who are working in rough set theory, and granular computing.

Features
► Considers not only the regular attributes but also the criteria in the incomplete information systems ► Presents most of the important rough set models in the incomplete information systems ► Addresses the practical approaches to compute reducts in terms of these models

Contents

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

Target groups
Research

Product category
Monograph

Due February 2012
Jointly published with Science Press.

Distribution rights in China: Science Press
2012. 225 p. 5 illus. Hardcover
► $109.00
ISBN 978-3-642-25934-1

X. Yang, Jiangsu University of Science and Technology, China; J. Yang, Nanjing University of Science and Technology, Jiangsu, China