

## A Short Introduction To Boosting

This book presents revised reviewed versions of lectures given during the Machine Learning Summer School held in Canberra, Australia, in February 2002. The lectures address the following key topics in algorithmic learning: statistical learning theory, kernel methods, boosting, reinforcement learning, theory learning, association rule learning, and learning linear classifier systems. Thus, the book is well balanced between classical topics and new approaches in machine learning. Advanced students and lecturers will find this book a coherent in-depth overview of this exciting area, while researchers will use this book as a valuable source of reference.

This volume presents the proceedings of the 9th Online World Conference on Soft Computing in Industrial Applications, held on the World Wide Web in 2004. It includes lectures, original papers and tutorials presented during the conference. The book brings together outstanding research and developments in soft computing, including evolutionary computation, fuzzy logic, neural networks, and their fusion, and its applications in science and technology.

Understanding Research at Google Inc., overseeing research and development in computer vision aimed at extremely large-scale application.

The book covers the most recent developments in machine learning, signal analysis, and their applications. It covers the topics of machine intelligence such as: deep learning, soft computing approaches, support vector machines (SVMs), least square SVMs (LSSVMs) and their variants; and covers the topics of signal analysis such as: biomedical signals including electroencephalogram (EEG), magnetoencephalography (MEG), electrocardiogram (ECG) and electromyogram (EMG) as well as other signals such as speech signals, communication signals, vibration signals, image, and video. Further, it analyzes normal and abnormal categories of real-world signals, for example normal and epileptic EEG signals using numerous classification techniques. The book is envisioned for researchers and graduate students in Computer Science and Engineering, Electrical Engineering, Applied Mathematics, and Biomedical Signal Processing.

This textbook considers statistical learning applications when interest centers on the conditional distribution of the response variable, given a set of predictors, and when it is important to characterize how the predictors are related to the response. This fully revised new edition includes important developments over the past 8 years. Consistent with modern data analytics, it emphasizes that a proper statistical learning data analysis derives from sound data collection, intelligent data management, appropriate statistical procedures, and an accessible interpretation of results. As in the first edition, a unifying theme is supervised learning that can be treated as a form of regression analysis. Key concepts and procedures are illustrated with real applications, especially those with practical implications. The material is written for upper undergraduate level and graduate students in the social and life sciences and for researchers who want to apply statistical learning procedures to scientific and policy problems. The author uses this book in a course on modern regression for the social, behavioral, and biological sciences. All of the analyses included are done in R with code routinely provided. This book highlights practical quantum key distribution systems and research on the implementations of next-generation quantum communication, as well as photonic

quantum device technologies. It discusses how the advances in quantum computing and quantum physics have allowed the building, launching and deploying of space exploration systems that are capable of more and more as they become smaller and lighter. It also presents theoretical and experimental research on the potential and limitations of secure communication and computation with quantum devices, and explores how security can be preserved in the presence of a quantum computer, and how to achieve long-distance quantum communication. The development of a real quantum computer is still in the early stages, but a number of research groups have investigated the theoretical possibilities of such computers.

This book constitutes the refereed proceedings of the First International Conference on Advanced Machine Learning Technologies and Applications, AMLTA 2012, held in Cairo, Egypt, in December 2012. The 58 full papers presented were carefully reviewed and selected from 99 initial submissions. The papers are organized in topical sections on rough sets and applications, machine learning in pattern recognition and image processing, machine learning in multimedia computing, bioinformatics and cheminformatics, data classification and clustering, cloud computing and recommender systems.

The guide to targeting and leveraging business opportunities using big data & analytics  
By leveraging big data & analytics, businesses create the potential to better understand, manage, and strategically exploiting the complex dynamics of customer behavior. Analytics in a Big Data World reveals how to tap into the powerful tool of data analytics to create a strategic advantage and identify new business opportunities. Designed to be an accessible resource, this essential book does not include exhaustive coverage of all analytical techniques, instead focusing on analytics techniques that really provide added value in business environments. The book draws on author Bart Baesens' expertise on the topics of big data, analytics and its applications in e.g. credit risk, marketing, and fraud to provide a clear roadmap for organizations that want to use data analytics to their advantage, but need a good starting point. Baesens has conducted extensive research on big data, analytics, customer relationship management, web analytics, fraud detection, and credit risk management, and uses this experience to bring clarity to a complex topic. Includes numerous case studies on risk management, fraud detection, customer relationship management, and web analytics Offers the results of research and the author's personal experience in banking, retail, and government Contains an overview of the visionary ideas and current developments on the strategic use of analytics for business Covers the topic of data analytics in easy-to-understand terms without an undue emphasis on mathematics and the minutiae of statistical analysis For organizations looking to enhance their capabilities via data analytics, this resource is the go-to reference for leveraging data to enhance business capabilities.

This book compiles and presents new developments in statistical causal inference. The accompanying data and computer programs are publicly available so readers may replicate the model development and data analysis presented in each chapter. In this way, methodology is taught so that readers may implement it directly. The book brings together experts engaged in causal inference research to present and discuss recent issues in causal inference methodological development. This is also a timely look at causal inference applied to scenarios that range from clinical trials to mediation and

public health research more broadly. In an academic setting, this book will serve as a reference and guide to a course in causal inference at the graduate level (Master's or Doctorate). It is particularly relevant for students pursuing degrees in statistics, biostatistics, and computational biology. Researchers and data analysts in public health and biomedical research will also find this book to be an important reference.

Humans are remarkable in processing speech, audio, image and some biomedical signals. Artificial neural networks are proved to be successful in performing several cognitive, industrial and scientific tasks. This peer reviewed book presents some recent advances and surveys on the applications of artificial neural networks in the areas of speech, audio, image and biomedical signal processing. Its chapters are prepared by some reputed researchers and practitioners around the globe.

Mathematical Analysis of Evolution, Information, and Complexity deals with the analysis of evolution, information and complexity. The time evolution of systems or processes is a central question in science, this text covers a broad range of problems including diffusion processes, neuronal networks, quantum theory and cosmology. Bringing together a wide collection of research in mathematics, information theory, physics and other scientific and technical areas, this new title offers elementary and thus easily accessible introductions to the various fields of research addressed in the book.

Automatic and reliable authentication of individuals is becoming an essential part of the modern world, for security and convenience in our life, in our work and in society. Biometrics-based systems utilize physiological or behavioral characteristics of an individual including the face, iris, fingerprint, palmprint, hand, voice, signature, or a combination of them, for this task. We are now seeing increasing interest and practical deployment of biometric systems.

The International Workshop on Biometric Recognition Systems (IWBR2005) was held in conjunction with ICCV 2005, providing an interactive forum for leading biometrics researchers and system designers. A biometric authentication competition (BAC) was conducted by the workshop to track the state-of-the-art biometrics technologies. This volume of workshop proceedings includes 32 papers carefully selected from a total of 130 submissions. The papers address the problems in face, iris, fingerprint, palmprint, speech, writing and other biometrics, and contribute new ideas to research and development of reliable and practical solutions for biometric authentication. We would like to express our gratitude to all the contributors, reviewers, and Program Committee and Organizing Committee members who made this a very successful workshop. We also wish to acknowledge the Institute of Automation, Chinese Academy of Sciences, and Springer for sponsoring this workshop. Special thanks are due to Miao Hong, Xin Yang, Zhuoshi Wei, Yinghao Cai, Zhaofeng He, Cheng Zhong, Shiqi Yu and Xianchao Qiu for their hard work in workshop organization. We hope you could benefit from the fruitful workshop to improve the performance of your biometric systems.

The three volume proceedings LNAI 10534 – 10536 constitutes the refereed proceedings of the European Conference on Machine Learning and Knowledge Discovery in Databases, ECML PKDD 2017, held in Skopje, Macedonia, in September 2017. The total of 101 regular papers presented in part I and part II was carefully reviewed and selected from 364 submissions; there are 47 papers in the applied data science, nectar and demo track. The contributions were organized in topical sections

named as follows: Part I: anomaly detection; computer vision; ensembles and meta learning; feature selection and extraction; kernel methods; learning and optimization, matrix and tensor factorization; networks and graphs; neural networks and deep learning. Part II: pattern and sequence mining; privacy and security; probabilistic models and methods; recommendation; regression; reinforcement learning; subgroup discovery; time series and streams; transfer and multi-task learning; unsupervised and semisupervised learning. Part III: applied data science track; nectar track; and demo track.

"This book is a timely compendium of key elements that are crucial for the study of machine learning in chemoinformatics, giving an overview of current research in machine learning and their applications to chemoinformatics tasks"--Provided by publisher.

Computer Vision/Computer Graphics Collaboration Techniques 5th International Conference, MIRAGE 2011, Rocquencourt, France, October 10-11, 2011.

Proceedings Springer Science & Business Media

This book constitutes the refereed proceedings of the 4th International Conference on Image Analysis and Recognition, ICIAR 2007, held in Montreal, Canada, in August 2007. The 71 revised full papers and 44 revised poster papers presented were carefully reviewed and selected from 261 submissions. The papers are organized in topical sections on image restoration and enhancement, image and video processing and analysis, image segmentation, computer vision, pattern recognition for image analysis, shape and matching, motion analysis, tracking, image retrieval and indexing, image and video coding and encryption, biometrics, biomedical image analysis, and applications. The two volume set LNCS 6854/6855 constitutes the refereed proceedings of the International Conference on Computer Analysis of Images and Patterns, CAIP 2011, which took place in Seville, Spain, August 29-31, 2011. The 138 papers presented together with 2 invited talks were carefully reviewed and selected from 286 submissions. The papers are organized in topical section on: motion analysis, image and shape models, segmentation and grouping, shape recovery, kernel methods, medical imaging, structural pattern recognition, Biometrics, image and video processing, calibration; and tracking and stereo vision.

It is with great pleasure that we present the proceedings of the 6th International Symposium on Visual Computing (ISVC 2010), which was held in Las Vegas, Nevada. ISVC provides a common umbrella for the four main areas of visual computing including vision, graphics, visualization, and virtual reality. The goal is to provide a forum for researchers, scientists, engineers, and practitioners throughout the world to present their latest research findings, ideas, developments, and applications in the broader area of visual computing. This year, the program consisted of 14 oral sessions, one poster session, 7 special tracks, and 6 keynote presentations. The response to the call for papers was very good; we received over 300 submissions for the main symposium from which we accepted 93 papers for oral presentation and 73 papers for poster presentation. Special track papers were solicited separately through the Organizing and Program Committees of each track. A total of 44 papers were accepted for oral

presentation and 6 papers for poster presentation in the special tracks. The European Conference on Machine Learning (ECML) and the European Conference on Principles and Practice of Knowledge Discovery in Databases (PKDD) were jointly organized this year for the 7th time in a row, after some years of mutual independence before. After Freiburg (2001), Helsinki (2002), Cavtat (2003) and Pisa (2004), Porto received the 16th edition of ECML and the 9th PKDD in October 3–7. Having the two conferences together seems to be working well: 585 different paper submissions were received for both events, which maintains the high submission standard of last year. Of these, 335 were submitted to ECML only, 220 to PKDD only and 30 to both. Such a high volume of scientific work required a tremendous effort from Area Chairs, Program Committee members and some additional reviewers. On average, PC members had 10 papers to evaluate, and Area Chairs had 25 papers to decide upon. We managed to have 3 highly qualified independent reviews per paper (with very few exceptions) and one additional overall input from one of the Area Chairs. After the authors' responses and the online discussions for many of the papers, we arrived at the final selection of 40 regular papers for ECML and 35 for PKDD. Besides these, 32 others were accepted as short papers for ECML and 35 for PKDD. This represents a joint acceptance rate of around 13% for regular papers and 25% overall. We thank all involved for all the effort with reviewing and selection of papers. Besides the core technical program, ECML and PKDD had 6 invited speakers, 10 workshops, 8 tutorials and a Knowledge Discovery Challenge. 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: describes a non-lossy compression scheme based on run-length encoding of patterns with binary valued features; proposes a lossy compression scheme that recognizes a pattern as a sequence of features and identifying subsequences; examines whether the identification of prototypes and features can be achieved simultaneously through lossy compression and efficient clustering; discusses ways to make use of domain knowledge in generating abstraction; reviews optimal prototype selection using genetic algorithms; suggests possible ways of dealing with big data problems using multiagent systems. The refereed proceedings of the 4th International Workshop on Multiple Classifier Systems, MCS 2003, held in Guildford, UK in June 2003. The 40 revised full papers presented with one invited paper were carefully reviewed and selected for presentation. The papers are organized in topical sections on boosting, combination rules, multi-class methods, fusion schemes and architectures, neural network ensembles, ensemble strategies, and applications

The LNCS volume LNCS 9714 constitutes the refereed proceedings of the International Conference on Data Mining and Big Data, DMBD 2016, held in Bali, Indonesia, in June 2016. The 57 papers presented in this volume were carefully reviewed and selected from 115 submissions. The theme of DMBD 2016 is "Serving Life with Data Science". Data mining refers to the activity of going through big data sets to look for relevant or pertinent information. The papers are organized in 10 cohesive sections covering all major topics of the research and development of data mining and big data and one Workshop on Computational Aspects of Pattern Recognition and Computer Vision.

The five-volume set LNCS 9003--9007 constitutes the thoroughly refereed post-conference proceedings of the 12th Asian Conference on Computer Vision, ACCV 2014, held in Singapore, Singapore, in November 2014. The total of 227 contributions presented in these volumes was carefully reviewed and selected from 814 submissions. The papers are organized in topical sections on recognition; 3D vision; low-level vision and features; segmentation; face and gesture, tracking; stereo, physics, video and events; and poster sessions 1-3. During the last years there has been an increasing interest in the area of service robots. Under this category we find robots working in tasks such as elderly care, guiding, office and domestic assistance, inspection, and many more. Service robots usually work in indoor environments designed for humans, with offices and houses being some of the most typical examples. These environments are typically divided into places with different functionalities like corridors, rooms or doorways. The ability to learn such semantic categories from sensor data enables a mobile robot to extend its representation of the environment, and to improve its capabilities. As an example, natural language terms like corridor or room can be used to indicate the position of the robot in a more intuitive way when communicating with humans. This book presents several approaches to enable a mobile robot to categorize places in indoor environments. The categories are indicated by terms which represent the different regions in these environments. The objective of this work is to enable mobile robots to perceive the spatial divisions in indoor environments in a similar way as people do. This is an interesting step forward to the problem of moving the perception of robots closer to the perception of humans. Many approaches introduced in this book come from the area of pattern recognition and classification. The applied methods have been adapted to solve the specific problem of place recognition. In this regard, this work is a useful reference to students and researchers who want to introduce classification techniques to help solve similar problems in mobile robotics.

Rem tene, verba sequentur (Gaius J. Victor, Rome VI century b.c.) The ultimate goal of this book is to bring the fundamental issues of information granularity, inference tools and problem solving procedures into a coherent, unified, and fully operational framework. The objective is to offer the reader a comprehensive, self-contained, and uniform exposure to the subject. The strategy is to isolate some

fundamental bricks of Computational Intelligence in terms of key problems and methods, and discuss their implementation and underlying rationale within a well structured and rigorous conceptual framework as well as carefully related to various application facets. The main assumption is that a deep understanding of the key problems will allow the reader to compose into a meaningful mosaic the puzzle pieces represented by the immense varieties of approaches present in the literature and in the computational practice. All in all, the main approach advocated in the monograph consists of a sequence of steps offering solid conceptual fundamentals, presenting a carefully selected collection of design methodologies, discussing a wealth of development guidelines, and exemplifying them with a pertinent, accurately selected illustrative material.

While cognitive informatics and natural intelligence are receiving greater attention by researchers, multidisciplinary approaches still struggle with fundamental problems involving psychology and neurobiological processes of the brain. Examining the difficulties of certain approaches using the tools already available is vital for propelling knowledge forward and making further strides. Innovations, Algorithms, and Applications in Cognitive Informatics and Natural Intelligence is a collection of innovative research that examines the enhancement of human cognitive performance using emerging technologies. Featuring research on topics such as parallel computing, neuroscience, and signal processing, this book is ideally designed for engineers, computer scientists, programmers, academicians, researchers, and students.

This book constitutes the refereed conference proceedings of the 15th International Conference on Rough Sets, Fuzzy Sets, Data Mining and Granular Computing, RSFDGrC 2015, held in Tianjin, China in November 2015 as one of the co-located conference of the 2015 Joint Rough Set Symposium, JRS 2015. The 44 papers were carefully reviewed and selected from 97 submissions. The papers in this volume cover topics such as rough sets: the experts speak; generalized rough sets; rough sets and graphs; rough and fuzzy hybridization; granular computing; data mining and machine learning; three-way decisions; IJCRS 2015 data challenge.

This book examines mechatronics and automatic control systems. The book covers important emerging topics in signal processing, control theory, sensors, mechanic manufacturing systems and automation. The book presents papers from the second International Conference on Mechatronics and Automatic Control Systems held in Beijing, China on September 20-21, 2014. Examines how to improve productivity through the latest advanced technologies Covering new systems and techniques in the broad field of mechatronics and automatic control systems

This book represents the combined peer-reviewed proceedings of the ninth International Symposium on Intelligent Distributed Computing – IDC'2015, of the Workshop on Cyber Security and Resilience of Large-Scale Systems – WSRL'2015, and of the International Workshop on Future Internet and Smart

Networks – FI&SN'2015. All the events were held in Guimarães, Portugal during October 7th-9th, 2015. The 46 contributions published in this book address many topics related to theory and applications of intelligent distributed computing, including: Intelligent Distributed Agent-Based Systems, Ambient Intelligence and Social Networks, Computational Sustainability, Intelligent Distributed Knowledge Representation and Processing, Smart Networks, Networked Intelligence and Intelligent Distributed Applications, amongst others.

This book constitutes the refereed proceedings of the 6th European Conference on Genetic Programming, EuroGP 2003, held in Essex, UK in April 2003. The 45 revised papers presented were carefully reviewed and selected from 61 submissions. All current aspects of genetic programming and genetic algorithms are addressed, ranging from foundational, theoretical, and methodological issues to advanced applications in various fields.

Identifying some of the most influential algorithms that are widely used in the data mining community, *The Top Ten Algorithms in Data Mining* provides a description of each algorithm, discusses its impact, and reviews current and future research. Thoroughly evaluated by independent reviewers, each chapter focuses on a particular algorithm and is written by either the original authors of the algorithm or world-class researchers who have extensively studied the respective algorithm. The book concentrates on the following important algorithms: C4.5, k-Means, SVM, Apriori, EM, PageRank, AdaBoost, kNN, Naive Bayes, and CART. Examples illustrate how each algorithm works and highlight its overall performance in a real-world application. The text covers key topics—including classification, clustering, statistical learning, association analysis, and link mining—in data mining research and development as well as in data mining, machine learning, and artificial intelligence courses. By naming the leading algorithms in this field, this book encourages the use of data mining techniques in a broader realm of real-world applications. It should inspire more data mining researchers to further explore the impact and novel research issues of these algorithms.

*Model Management and Analytics for Large Scale Systems* covers the use of models and related artefacts (such as metamodels and model transformations) as central elements for tackling the complexity of building systems and managing data. With their increased use across diverse settings, the complexity, size, multiplicity and variety of those artefacts has increased. Originally developed for software engineering, these approaches can now be used to simplify the analytics of large-scale models and automate complex data analysis processes. Those in the field of data science will gain novel insights on the topic of model analytics that go beyond both model-based development and data analytics. This book is aimed at both researchers and practitioners who are interested in model-based development and the analytics of large-scale models, ranging from big data management and analytics, to enterprise domains. The book could also be used in graduate courses on model development, data analytics and data

management. Identifies key problems and offers solution approaches and tools that have been developed or are necessary for model management and analytics  
Explores basic theory and background, current research topics, related challenges and the research directions for model management and analytics  
Provides a complete overview of model management and analytics frameworks, the different types of analytics (descriptive, diagnostics, predictive and prescriptive), the required modelling and method steps, and important future directions

Based on more than 10 years of teaching experience, Blanken and his coeditors have assembled all the topics that should be covered in advanced undergraduate or graduate courses on multimedia retrieval and multimedia databases. The single chapters of this textbook explain the general architecture of multimedia information retrieval systems and cover various metadata languages such as Dublin Core, RDF, or MPEG. The authors emphasize high-level features and show how these are used in mathematical models to support the retrieval process. For each chapter, there's detail on further reading, and additional exercises and teaching material is available online.

It is our great pleasure to welcome you to the 11th International Conference on Neural Information Processing (ICONIP 2004) to be held in Calcutta. ICONIP 2004 is organized jointly by the Indian Statistical Institute (ISI) and Jadavpur University (JU). We are confident that ICONIP 2004, like the previous conferences in this series, will provide a forum for fruitful interaction and the exchange of ideas between the participants coming from all parts of the globe. ICONIP 2004 covers all major facets of computational intelligence, but, of course, with a primary emphasis on neural networks. We are sure that this meeting will be enjoyable academically and otherwise. We are thankful to the track chairs and the reviewers for extending their support in various forms to make a sound technical program. Except for a few cases, where we could get only two review reports, each submitted paper was reviewed by at least three referees, and in some cases the revised versions were again checked by the referees. We had 470 submissions and it was not an easy task for us to select papers for a four-day conference. Because of the limited duration of the conference, based on the review reports we selected only about 40% of the contributed papers. Consequently, it is possible that some good papers are left out. We again express our sincere thanks to all referees for accomplishing a great job. In addition to 186 contributed papers, the proceedings includes two plenary presentations, four invited talks and 18 papers in four special sessions. The proceedings is organized into 26 coherent topical groups.

This book constitutes the refereed proceedings of the 10th International Workshop on Multiple Classifier Systems, MCS 2011, held in Naples, Italy, in June 2011. The 36 revised papers presented together with two invited papers were carefully reviewed and selected from more than 50 submissions. The contributions are organized into sessions dealing with classifier ensembles; trees and forests; one-class classifiers; multiple kernels; classifier selection; sequential combination; ECOC; diversity; clustering; biometrics; and computer security. A bold retooling of statistics to focus directly on predictive performance with traditional and contemporary data types and methodologies.

The Machine Age of Customer Insight demonstrates the impact of machine learning and data analytics, combining an academic state-of-the-art overview of machine learning with cases from well-known companies. These cases show the opportunities and challenges of the transformation process for business and for customer insights more specifically.

This book presents a fresh, new approach in that it provides a comprehensive recent review of challenging problems caused by imbalanced data in prediction and classification, and also in that it introduces several of the latest statistical methods of dealing with these problems. The

book discusses the property of the imbalance of data from two points of view. The first is quantitative imbalance, meaning that the sample size in one population highly outnumbers that in another population. It includes presence-only data as an extreme case, where the presence of a species is confirmed, whereas the information on its absence is uncertain, which is especially common in ecology in predicting habitat distribution. The second is qualitative imbalance, meaning that the data distribution of one population can be well specified whereas that of the other one shows a highly heterogeneous property. A typical case is the existence of outliers commonly observed in gene expression data, and another is heterogeneous characteristics often observed in a case group in case-control studies. The extension of the logistic regression model, maxent, and AdaBoost for imbalanced data is discussed, providing a new framework for improvement of prediction, classification, and performance of variable selection. Weights functions introduced in the methods play an important role in alleviating the imbalance of data. This book also furnishes a new perspective on these problem and shows some applications of the recently developed statistical methods to real data sets.

The first book, by the leading experts, on this rapidly developing field with applications to security, smart homes, multimedia, and environmental monitoring Comprehensive coverage of fundamentals, algorithms, design methodologies, system implementation issues, architectures, and applications Presents in detail the latest developments in multi-camera calibration, active and heterogeneous camera networks, multi-camera object and event detection, tracking, coding, smart camera architecture and middleware This book is the definitive reference in multi-camera networks. It gives clear guidance on the conceptual and implementation issues involved in the design and operation of multi-camera networks, as well as presenting the state-of-the-art in hardware, algorithms and system development. The book is broad in scope, covering smart camera architectures, embedded processing, sensor fusion and middleware, calibration and topology, network-based detection and tracking, and applications in distributed and collaborative methods in camera networks. This book will be an ideal reference for university researchers, R&D engineers, computer engineers, and graduate students working in signal and video processing, computer vision, and sensor networks. Hamid Aghajan is a Professor of Electrical Engineering (consulting) at Stanford University. His research is on multi-camera networks for smart environments with application to smart homes, assisted living and well being, meeting rooms, and avatar-based communication and social interactions. He is Editor-in-Chief of Journal of Ambient Intelligence and Smart Environments, and was general chair of ACM/IEEE ICDSC 2008. Andrea Cavallaro is Reader (Associate Professor) at Queen Mary, University of London (QMUL). His research is on target tracking and audiovisual content analysis for advanced surveillance and multi-sensor systems. He serves as Associate Editor of the IEEE Signal Processing Magazine and the IEEE Trans. on Multimedia, and has been general chair of IEEE AVSS 2007, ACM/IEEE ICDSC 2009 and BMVC 2009. The first book, by the leading experts, on this rapidly developing field with applications to security, smart homes, multimedia, and environmental monitoring Comprehensive coverage of fundamentals, algorithms, design methodologies, system implementation issues, architectures, and applications Presents in detail the latest developments in multi-camera calibration, active and heterogeneous camera networks, multi-camera object and event detection, tracking, coding, smart camera architecture and middleware

This book constitutes the refereed proceedings of the 5th International Conference on Computer Vision/Computer Graphics Collaboration Techniques, MIRAGE 2011, held in Rocquencourt, France, in October 2011. The 23 full papers presented were carefully reviewed and selected from numerous submissions. The papers cover a wide range of topics with focus on Computer Vision/Computer Graphics Collaboration Techniques involving image analysis/synthesis approaches especially concerning theoretical, computational, experimental or industrial aspects of model-based image analysis and image-based model synthesis.

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