Bayesian Image Super Resolution

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Super-Resolution Imaging Springer Nature
The goal of super-resolution is to increase not only the size of an image, but also its apparent resolution, making the result more plausible to human viewers. Many super-resolution methods do well at modest magnification factors, but even the best suffer from boundary and gradient artifacts at high magnification factors. This thesis presents Bayesian edge inference (BEI), a novel method grounded in Bayesian inference that does not suffer from these artifacts and remains competitive in published objective quality measures. BEI works by modeling the image capture process explicitly, including any downsampling, and modeling a fictional recapture process, which together allow principled control over blur. Scene modeling requires noncausal modeling within a causal framework, and an intuitive technique for that is given. Finally, BEI with trivial changes is shown to perform well on two tasks outside of its original domain--CCD demosaicing and inpainting--suggesting that the model generalizes well.

Medical Image Computing and Computer-Assisted Intervention -- MICCAI 2013 Springer
Papers presented at the 2003 Neural Information Processing Conference by leading physicists, neuroscientists, mathematicians, statisticians, and computer scientists. The annual Neural Information Processing (NIPS) conference is the flagship meeting on neural computation. It draws a diverse group of attendees -- physicists, neuroscientists, mathematicians, statisticians, and computer scientists. The presentations are interdisciplinary, with contributions in algorithms, learning theory, cognitive science, neuroscience, brain imaging, vision, speech and signal processing, reinforcement learning and control, emerging technologies, and applications. Only thirty percent of the papers submitted are accepted for presentation at NIPS, so the quality is exceptionally high. This volume contains all the papers presented at the 2003 conference.

Springer

The book includes insights that reflect the advances in the field of Internet of Things from upcoming researchers and leading academicians across the globe. It contains the high-quality peer-reviewed papers of 'International Conference on Internet of Things for Technological Development (IoT4TD 2017)', held at Kadi Sarva Vishvavidyalaya, Gandhinagar, Gujarat, India during April 1-2, 2017. The book covers variety of topics such as Internet of things, Intelligent Image Processing, Networks and Mobile Communications, Big Data and Cloud. The book is helpful for the perspective readers' from computer industry and academia to derive the advances of next generation communication and computational technology and shape them into real life applications.

Advances in Neural Information Processing Systems 16 Academic Press The two-volume set LNCS 11961 and 11962 constitutes the thoroughly refereed proceedings of the 25th International Conference on MultiMedia Modeling, MMM 2020, held in Daejeon, South Korea, in January 2020. Of the 171 submitted full research papers, 40 papers were selected for oral presentation and 46 for poster presentation; 28 special session papers were selected for oral presentation and 8 for poster presentation; in addition, 9 demonstration papers and 6 papers for the Video Browser Showdown 2020 were accepted. The papers of LNCS 11961 are organized in the following topical sections: audio and signal processing; coding and HVS; color processing and art; detection and classification; face; image processing; learning and knowledge representation; video processing; poster papers; the papers of LNCS 11962 are organized in the following topical sections: poster papers; AI-powered 3D vision; multimedia analytics: perspectives, tools and applications; multimedia datasets for repeatable experimentation; multi-modal affective computing of large-scale multimedia data; multimedia and multimodal analytics in the medical domain and pervasive environments; intelligent multimedia security; demo

papers; and VBS papers.

Bayesian Super-resolution with Application to Radar Target Recognition Springer The two-volume set LNCS 9279 and 9280 constitutes the refereed proceedings of the 18th International Conference on Image Analysis and Processing, ICIAP 2015, held in Genoa, Italy, in September 2015. The 129 papers presented were carefully reviewed and selected from 231 submissions. The papers are organized in the following seven topical sections: video analysis and understanding, multiview geometry and 3D computer vision, pattern recognition and machine learning, image analysis, detection and recognition, shape analysis and modeling, multimedia, and biomedical applications.

Pattern Recognition Springer With the exponential increase in computing power and broad proliferation of digital cameras, super-resolution imaging is poised to become the next "killer app." The growing interest in this technology has manifested itself in an explosion of literature on the subject. Super-Resolution Imaging consolidates key recent research contributions from eminent scholars and practitioners in this area and serves as a starting point for exploration into the state of the art in the field. It describes the latest in both theoretical and practical aspects of direct relevance to academia and industry, providing a base of understanding for future progress. Features downloadable tools to supplement material found in the book Recent advances in camera sensor technology have led to an increasingly larger number of pixels being crammed into ever-smaller spaces. This has resulted in an overall decline in the visual quality of

recorded content, necessitating improvement of images through the use of post-processing. Providing a snapshot of the cutting edge in super-resolution imaging, this book focuses on methods and techniques to improve images and video beyond the capabilities of the sensors that acquired them. It covers: History and future directions of super-resolution imaging Locally adaptive processing methods versus globally optimal methods Modern techniques for motion estimation How to integrate robustness Bayesian statistical approaches Learning-based methods Applications in remote sensing and medicine Practical implementations and commercial products based on super-resolution The book concludes by concentrating on multidisciplinary applications of super-resolution for a variety of fields. It covers a wide range of super-resolution imaging implementation techniques, including variational, feature-based, multi-channel, learning-based, locally adaptive, and nonparametric methods. This versatile book can be used as the basis for short courses for engineers and scientists, or as part of graduate-level courses in image processing.

Computer Analysis of Images and Patterns
Springer Science & Business Media
The two-volume set LNCS 9516 and 9517 constitutes the thoroughly refereed proceedings of the 22nd International Conference on Multimedia Modeling, MMM 2016, held in Miami, FL, USA, in January 2016. The 32 revised full papers and 52 poster papers were carefully reviewed and selected from 117 submissions. In addition 20 papers were accepted for five special sessions out of 38 submissions as well as 7 demonstrations (from 11 submissions) and 9 video showcase papers. The papers are organized in topical sections on video content analysis, social media analysis, object recognition and system, multimedia retrieval and ranking, multimedia representation, machine learning in multimedia, and interaction and mobile. The special sessions are: good practices in multimedia modeling; semantics discovery from multimedia big data; perception, aesthetics, and emotion in multimedia quality modeling; multimodal learning and computing for human activity understanding; and perspectives on multimedia analytics./div

Artificial Neural Networks - ICANN 2007
Springer
Issues in Analysis, Measurement, Monitoring, Imaging, and Remote Sensing Technology: 2013 Edition is a ScholarlyEditions™ book that delivers timely, authoritative, and comprehensive information about Analysis and Measurement. The editors have built Issues in Analysis, Measurement, Monitoring, Imaging, and Remote Sensing Technology: 2013 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Analysis and Measurement in this book to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Analysis, Measurement, Monitoring, Imaging, and Remote Sensing Technology: 2013 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available

exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at http://www.ScholarlyEditions.com/.

Handbook of Medical Image Computing and Computer Assisted Intervention John Wiley & Sons

This three volume set LNCS 6352, LNCS 6353, and LNCS 6354 constitutes the refereed proceedings of the 20th International Conference on Artificial Neural Networks, ICANN 2010, held in Thessaloniki, Greece, in September 2010. The 102 revised full papers, 68 short papers and 29 posters presented were carefully reviewed and selected from 241 submissions. The first volume is divided in topical sections on ANN applications, Bayesian ANN, bio inspired – spiking ANN, biomedical ANN, computational neuroscience, feature selection/parameter identification and dimensionality reduction, filtering, genetic – evolutionary algorithms, and image – video and audio processing.

Advanced Concepts for Intelligent Vision Systems Springer

This book covers the results of a study concerning systems for healthcare-oriented monitoring of elderly persons. It is focused on the methods for processing data from impulse-radar sensors and depth sensors, aimed at localisation of monitored persons and estimation of selected quantities informative from the healthcare point of view. It includes mathematical descriptions of the considered methods, as well as the corresponding algorithms and the results of their testing in a real-world context. Moreover, it explains the motivations for developing healthcare-oriented monitoring systems and specifies the real-world needs which may be addressed by such systems. The healthcare systems, all over the world, are confronted with challenges implied by the ageing of population and the lack of adequate recruitment of healthcare professionals. Those challenges can be met by developing new technologies aimed at improving the quality of life of elderly people

and at increasing the efficiency of public health management. Monitoring systems may contribute to this strategy by providing information on the evolving health status of independently-living elderly persons, enabling healthcare personnel to quickly react to dangerous events. Although these facts are generally acknowledged, such systems are not yet being commonly used in healthcare facilities and households. This may be explained by the difficulties related to the development of technological solutions which can be both acceptable for monitored persons and capable of providing healthcare personnel with useful information. The impulse-radar sensors and depth sensors, considered in this book, have a potential for overcoming those difficulties since they are not cumbersome for the monitored persons -- if compared to wearable sensors -- and do not violate the monitored person's privacy -- if compared to video cameras. Since for safety reasons the level of power, emitted by the radar sensors, must be ultra-low, the task of detection and processing of signals is a research challenge which requires more sophisticated methods than those developed for other radar applications. This book contains descriptions of new Bayesian methods, applicable for the localisation of persons by means of impulse-radar sensors, and an exhaustive review of previously published ones. Furthermore, the methods for denoising, regularised numerical differentiation and fusion of data from impulse-radar sensors and depth sensors are systematically reviewed in this book. On top of that, the results of experiments aimed at comparing the performance of various data-processing methods, which may serve as guidelines for related future projects, are presented.

ICT and Critical Infrastructure: Proceedings of the 48th Annual Convention of Computer Society of India- Vol II Springer

This thesis is concerned with methods to facilitate automatic target recognition using

images generated from a group of associated radar systems. Target recognition algorithms require access to a database of previously recorded or synthesized radar images for the targets of interest, or a database of features based on those images. However, the resolution of a new image acquired under non-ideal conditions may not be as good as that of the images used to generate the database. Therefore it is proposed to use super-resolution techniques to match the resolution of new images with the resolution of database images. A comprehensive review of the literature is given for super-resolution when used either on its own, or in conjunction with target recognition. A new superresolution algorithm is developed that is based on numerical Markov chain Monte Carlo Bayesian statistics. This algorithm allows uncertainty in the superresolved image to be taken into account in the target recognition process. It is shown that the Bayesian approach improves the probability of correct target classification over standard super-resolution techniques. The new super-resolution algorithm is demonstrated using a simple synthetically generated data set and is compared to other similar algorithms. A variety of effects that degrade super-resolution performance, such as defocus, are analyzed and techniques to compensate for these are presented. Performance of the super-resolution algorithm is then tested as part of a Bayesian target recognition framework using measured radar data.

Super-resolution Via Image Recapture and Bayesian Effect Modeling Springer Digital Image Enhancement and Reconstruction: Techniques and Applications explores different concepts and techniques used for the enhancement as well as reconstruction of low-quality images. Most real-life applications require good quality images to gain maximum performance, however, the quality of the images captured in real-world scenarios is often very unsatisfactory. Most commonly, images are noisy, blurry, hazy, tiny, and hence need to pass through image enhancement and/or reconstruction algorithms before they can be processed by image analysis applications. This book comprehensively explores application-specific enhancement and reconstruction techniques including satellite image enhancement, face hallucination, low-resolution face recognition, medical image enhancement and reconstruction, reconstruction of underwater images, text image enhancement, biometrics, etc. Chapters will present a detailed discussion of the challenges faced in handling each particular kind of image, analysis of the best available solutions, and an exploration of applications and future directions. The book provides readers with a deep dive into denoising, dehazing, super-resolution, and use of soft computing across a range of engineering applications. Presents comprehensive coverage of digital image enhancement and reconstruction techniques Explores applications across range of fields, including intelligent surveillance systems, human-computer interaction, healthcare, agriculture, biometrics, modelling Explores different challenges and issues related to the implementation of various techniques for different types of images, including denoising, dehazing, super-resolution, and use of soft computing

Bayesian-based Image/video Super-resolution Techniques Morgan & Claypool Publishers

The two volume set LNCS 10424 and 10425 constitutes the refereed proceedings of the 17th International Conference on Computer Analysis of Images and Patterns,

CAIP 2017, held in Ystad, Sweden, in August 2017. The 72 papers presented were carefully reviewed and selected from 144 submissions The papers are organized in the following topical sections: Vision for Robotics; Motion and Tracking; Segmentation; Image/Video Indexing and Retrieval; Shape Representation and Analysis; Biomedical Image Analysis; Biometrics; Machine Learning; Image Restoration; and Poster Sessions.

Advances in Multimedia Information Processing - PCM 2006 MIT Press
Super Resolution of Images and VideoMorgan & Claypool Publishers
Medical Image Computing and Computer Assisted Intervention ? MICCAI 2017 KIT Scientific Publishing
Handbook of Medical Image Computing and Computer Assisted Intervention presents important advanced methods and state-of-the art research in medical image computing and computer assisted intervention, providing a comprehensive reference on current technical approaches and solutions, while also offering proven algorithms for a variety of essential medical imaging applications. This book is written primarily for university researchers, graduate students and professional practitioners (assuming an elementary level of linear algebra, probability and statistics, and signal processing) working on medical image computing and computer assisted intervention. Presents the key research challenges in medical image computing and computer-assisted intervention Written by leading authorities of the Medical Image Computing and Computer Assisted Intervention (MICCAI) Society Contains state-of-the-art technical approaches to key challenges Demonstrates proven algorithms for a whole range of essential medical imaging applications Includes source codes for use in a plug-and-play manner Embraces future directions in the fields of medical image computing and computer-assisted intervention

Advanced Topics on Computer Vision, Control and Robotics in Mechatronics CRC Press
With the exponential increase in computing power and broad proliferation of digital cameras, super-resolution imaging is poised to become the next "killer app." The growing interest in this technology has manifested itself in an explosion of literature on the subject. Super-Resolution Imaging consolidates key recent research contributions from eminent scholars and practitioners in this area and serves as a starting point for exploration into the state of the art in the field. It describes the latest in both theoretical and practical aspects of direct relevance to academia and industry, providing a base of understanding for future progress. Features downloadable tools to supplement material found in the book Recent advances in camera sensor technology have led to an increasingly larger number of pixels being crammed into ever-smaller spaces. This has resulted in an overall decline in the visual quality of recorded content, necessitating improvement of images through the use of post-processing. Providing a snapshot of the cutting edge in super-resolution imaging, this book focuses on methods and techniques to improve images and video beyond the capabilities of the sensors that acquired them. It covers: History and future directions of super-resolution imaging Locally adaptive processing methods versus globally optimal methods Modern techniques for motion estimation How to integrate robustness Bayesian statistical approaches Learning-based methods Applications in remote sensing and medicine Practical implementations and commercial products based on super-resolution The book concludes by concentrating on multidisciplinary applications of super-resolution for a variety of fields. It covers a wide range of super-resolution imaging implementation techniques, including variational, feature-based, multi-channel, learning-based, locally adaptive, and nonparametric methods. This versatile book can be used as the basis for short courses for engineers and scientists, or as part of graduate-level courses in image processing.

Super Resolution of Images and Video Springer
The two volume set LNCS 6938 and LNCS 6939 constitutes the refereed proceedings of the 7th International Symposium on Visual Computing, ISVC 2011, held in Las Vegas, NV, USA, in September 2011. The 68 revised full papers and 46 poster papers presented together with 30 papers in the special tracks were carefully reviewed and

selected from more than 240 submissions. The papers of part I (LNCS 6938) are organized in computational bioimaging, computer graphics, motion and tracking, segmentation, visualization; mapping modeling and surface reconstruction, biomedical imaging, computer graphics, interactive visualization in novel and heterogeneous display environments, object detection and recognition. Part II (LNCS 6939) comprises topics such as immersive visualization, applications, object detection and recognition, virtual reality, and best practices in teaching visual computing.

Image and Graphics Super Resolution of Images and Video

The field of mechatronics (which is the synergistic combination of precision mechanical engineering, electronic control and systems thinking in the design of products and manufacturing processes) is gaining much attention in industries and academics. It was detected that the topics of computer vision, control and robotics are imperative for the successful of mechatronics systems. This book includes several chapters which report successful study cases about computer vision, control and robotics. The readers will have the latest information related to mechatronics, that contains the details of implementation, and the description of the test scenarios.

Issues in Analysis, Measurement, Monitoring, Imaging, and Remote Sensing Technology: 2013 Edition Springer

This volume collects the papers accepted for presentation at the 11th Inter- tionalConf erenceonAdvancedConceptsforIntelligentVi sionSystems (ACIVS 2009). Following the ?rst meeting in Baden-Baden (Germany) in 1999, which was part of a large multiconference, the ACIVS conference then developed into an independent scienti?c event and has ever since maintained the tra- tion of being a single track conference. ACIVS 2009 attracted computer sci- tists from 25 di?erent countries, mostly from Europe, but also

from Australia, New-Zealand and Japan, and from the USA and Mexico. Although ACIVS is a conference on all areas of image and video processing, submissionstendtogat herwithincertainmajor?eldsofinterest.Aswast hecase lastyear,aboutaquarteroftheselectedpa persdealwithimageandvideocoding and processing, including ?ltering and restoration and low-level analysis. Topics related to biometrics (including face recognition), tracking, pattern recognition an dsceneunderstandingallremainwellrepresente d.Noteworthyarethegrowing number of papers related to medical applications and color processing and the papers related to the Technovision projects. We would like to thank the invited speakers Steve Sangwine (University of Essex, UK) and Jordi Inglada (CNES, France) for enhancing the technical program with their presentations.

Computer Vision -- ECCV 2014 Springer Nature
The seven-volume set comprising LNCS volumes 8689-8695 constitutes the refereed proceedings of the 13th European Conference on Computer Vision, ECCV 2014, held in Zurich, Switzerland, in September 2014. The 363 revised papers presented were carefully reviewed and selected from 1444 submissions. The papers are organized in topical sections on tracking and activity recognition; recognition; learning and inference; structure from motion and feature matching; computational photography and low-level vision; vision; segmentation and saliency; context and 3D scenes; motion and 3D scene analysis; and poster sessions.