Kinfu An Open Source Implementation Of Kinect Fusion

Reviewing **Kinfu An Open Source Implementation Of Kinect Fusion**: Unlocking the Spellbinding Force of Linguistics

In a fast-paced world fueled by information and interconnectivity, the spellbinding force of linguistics has acquired newfound prominence. Its capacity to evoke emotions, stimulate contemplation, and stimulate metamorphosis is really astonishing. Within the pages of "**Kinfu An Open Source Implementation Of Kinect Fusion**," an enthralling opus penned by a very acclaimed wordsmith, readers attempt an immersive expedition to unravel the intricate significance of language and its indelible imprint on our lives. Throughout this assessment, we shall delve to the book is central motifs, appraise its distinctive narrative style, and gauge its overarching influence on the minds of its readers.

Biomedical Engineering Systems and Technologies Alberto Cliquet Jr. 2019-08-12 This book constitutes the thoroughly refereed post-conference proceedings of the 11th International Joint Conference on Biomedical Engineering Systems and Technologies, BIOSTEC 2018, held in Funchal, Madeira, Portugal, in January 2018. The 25 revised full papers presented were carefully reviewed and selected from a total of 299 submissions. The papers are organized in topical sections on biomedical electronics and devices; bioimaging; bioinformatics models, methods and algorithms; health informatics.

Data Driven Treatment Response Assessment and Preterm, Perinatal, and Paediatric Image Analysis Andrew Melbourne 2018-09-14 This book constitutes the refereed joint proceedings of the First International Workshop on Data Driven Treatment Response Assessment, DATRA 2018 and the Third International Workshop on Preterm, Perinatal and Paediatric Image Analysis, PIPPI 2018, held in conjunction with the 21st International Conference on Medical Imaging and Computer-Assisted Intervention, MICCAI 2018, in Granada, Spain, in September 2018. The 5 full papers presented at DATRA 2018 and the 12 full papers presented at PIPPI 2018 were carefully reviewed and selected. The DATRA papers cover a wide range of exploring pattern recognition technologies for tackling clinical issues related to the follow-up analysis of medical data with focus on malignancy progression analysis, computer-aided models of treatment response, and anomaly detection in recovery feedback. The PIPPI papers cover topics of advanced image analysis approaches focused on the analysis of growth and development in the fetal, infant and paediatric period.

Intelligent Robots R. C. Bolles 1997 Rapid advances in sensors, computers, and algorithms continue to fuel dramatic improvements in intelligent robots. In addition, robot vehicles are starting to appear in a number of applications. For example, they have been installed in public settings to perform such tasks as delivering items in hospitals and cleaning floors in supermarkets; recently, two small robot vehicles were launched to explore Mars.This book presents the latest advances in the principal fields that contribute to robotics. It contains contributions written by leading experts addressing topics such as Path and Motion Planning, Navigation and Sensing, Vision and Object Recognition, Environment Modeling, and others.

Die Fakultät für Elektrotechnik und Informationstechnik / The Faculty of Electrical Engineering and Information Technology Karl Unterrainer 2016-01-20 An autonomous faculty of the TU Wien for only forty years, Electrical Engineering and Information Technology are nevertheless among the most

important foundations of technical development since the 19th century. Areas of research are numerous and broad – starting with the “classics” like Energy Technologies and Telecommunications, research turned to the fields of System and Automation Technologies, Micro- and Nanoelectronics, and Photonics, all highly complex disciplines that have established themselves as essential to modern society.

Springer Handbook of Robotics Bruno Siciliano 2016-07-27 The second edition of this handbook provides a state-of-the-art overview on the various aspects in the rapidly developing field of robotics. Reaching for the human frontier, robotics is vigorously engaged in the growing challenges of new emerging domains. Interacting, exploring, and working with humans, the new generation of robots will increasingly touch people and their lives. The credible prospect of practical robots among humans is the result of the scientific endeavour of a half a century of robotic developments that established robotics as a modern scientific discipline. The ongoing vibrant expansion and strong growth of the field during the last decade has fueled this second edition of the Springer Handbook of Robotics. The first edition of the handbook soon became a landmark in robotics publishing and won the American Association of Publishers PROSE Award for Excellence in Physical Sciences & Mathematics as well as the organization’s Award for Engineering & Technology. The second edition of the handbook, edited by two internationally renowned scientists with the support of an outstanding team of seven part editors and more than 200 authors, continues to be an authoritative reference for robotics researchers, newcomers to the field, and scholars from related disciplines. The contents have been restructured to achieve four main objectives: the enlargement of foundational topics for robotics, the enlightenment of design of various types of robotic systems, the extension of the treatment on robots moving in the environment, and the enrichment of advanced robotics applications. Further to an extensive update, fifteen new chapters have been introduced on emerging topics, and a new generation of authors have joined the handbook’s team. A novel addition to the second edition is a comprehensive collection of multimedia references to more than 700 videos, which bring valuable insight into the contents. The videos can be viewed directly augmented into the text with a smartphone or tablet using a unique and specially designed app. Springer Handbook of Robotics Multimedia Extension Portal: http://handbookofrobotics.org/

Volcanoes in the Sea Gordon A. Macdonald 1983-07-01 Well written and superbly illustrated, this work includes chapters on tectonic plates, volcanoes, erosion by water and wind, the ocean, ice and glaciers, earthquakes and tsunamis.

Representations and Techniques for 3D Object Recognition and Scene Interpretation Derek Santhanam 2022-05-31 One of the grand challenges of artificial intelligence is to enable computers to interpret 3D scenes and objects from imagery. This book organizes and introduces major concepts in 3D scene and object representation and inference from still images, with a focus on recent efforts to fuse models of geometry and perspective with statistical machine learning. The book is organized into three sections: (1) Interpretation of Physical Space; (2) Recognition of 3D Objects; and (3) Integrated 3D Scene Interpretation. The first discusses representations of spatial layout and techniques to interpret physical scenes from images. The second section introduces representations for 3D object categories that account for the intrinsically 3D nature of objects and provide robustness to change in viewpoints. The third section discusses strategies to unite inference of scene geometry and object pose and identity into a coherent scene interpretation. Each section broadly surveys important ideas from cognitive science and artificial intelligence research, organizes and discusses key concepts and techniques from recent work in computer vision, and describes a few sample approaches in detail. Newcomers to computer vision will benefit from introductions to basic concepts, such as single-view geometry and image classification, while experts and novices alike may find inspiration from the book's organization and discussion of the most recent ideas in 3D scene understanding and 3D object

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recognition. Specific topics include: mathematics of perspective geometry; visual elements of the physical scene, structural 3D scene representations; techniques and features for image and region categorization; historical perspective, computational models, and datasets and machine learning techniques for 3D object recognition; inferences of geometrical attributes of objects, such as size and pose; and probabilistic and feature-passing approaches for contextual reasoning about 3D objects and scenes. Table of Contents: Background on 3D Scene Models / Single-view Geometry / Modeling the Physical Scene / Categorizing Images and Regions / Examples of 3D Scene Interpretation / Background on 3D Recognition / Modeling 3D Objects / Recognizing and Understanding 3D Objects / Examples of 2D 1/2 Layout Models / Reasoning about Objects and Scenes / Cascades of Classifiers / Conclusion and Future Directions

Design Recommendations for Intelligent Tutoring Systems Robert Sottilare 2015-07-05 Design Recommendations for Intelligent Tutoring Systems (ITSs) explores the impact of intelligent tutoring system design on education and training. Specifically, this volume examines “Authoring Tools and Expert Modeling Techniques”. The “Design Recommendations book series examines tools and methods to reduce the time and skill required to develop Intelligent Tutoring Systems with the goal of improving the Generalized Intelligent Framework for Tutoring (GIFT). GIFT is a modular, service-oriented architecture developed to capture simplified authoring techniques, promote reuse and standardization of ITSs along with automated instructional techniques and effectiveness evaluation capabilities for adaptive tutoring tools and methods.

OpenCV 3 Blueprints Joseph Howse 2015-11-10 Expand your knowledge of computer vision by building amazing projects with OpenCV 3 About This Book Build computer vision projects to capture high-quality image data, detect and track objects, process the actions of humans or animals, and much more Discover practical and interesting innovations in computer vision while building atop a mature open-source library, OpenCV 3 Familiarize yourself with multiple approaches and theories wherever critical decisions need to be made Who This Book Is For This book is ideal for you if you aspire to build computer vision systems that are smarter, faster, more complex, and more practical than the competition. This is an advanced book intended for those who already have some experience in setting up an OpenCV development environment and building applications with OpenCV. You should be comfortable with computer vision concepts, object-oriented programming, graphics programming, IDEs, and the command line. What You Will Learn Select and configure camera systems to see invisible light, fast motion, and distant objects Build a “camera trap”, as used by nature photographers, and process photos to create beautiful effects Develop a facial expression recognition system with various feature extraction techniques and machine learning methods Build a panorama Android application using the OpenCV stitching module in C++ with NDK support Optimize your object detection model, make it rotation invariant, and apply scene-specific constraints to make it faster and more robust Create a person identification and registration system based on biometric properties of that person, such as their fingerprint, iris, and face Fuse data from videos and gyroscopes to stabilize videos shot from your mobile phone and create hyperlapse style videos In Detail Computer vision is becoming accessible to a large audience of software developers who can leverage mature libraries such as OpenCV. However, as they move beyond their first experiments in computer vision, developers may struggle to ensure that their solutions are sufficiently well optimized, well trained, robust, and adaptive in real-world conditions. With sufficient knowledge of OpenCV, these developers will have enough confidence to go about creating projects in the field of computer vision. This book will help you tackle increasingly challenging computer vision problems that you may face in your careers. It makes use of OpenCV 3 to work around some interesting projects. Inside these pages, you will find practical and innovative approaches that are battle-tested in the authors'

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industry experience and research. Each chapter covers the theory and practice of multiple complementary approaches so that you will be able to choose wisely in your future projects. You will also gain insights into the architecture and algorithms that underpin OpenCV's functionality. We begin by taking a critical look at inputs in order to decide which kinds of light, cameras, lenses, and image formats are best suited to a given purpose. We proceed to consider the finer aspects of computational photography as we build an automated camera to assist nature photographers. You will gain a deep understanding of some of the most widely applicable and reliable techniques in object detection, feature selection, tracking, and even biometric recognition. We will also build Android projects in which we explore the complexities of camera motion: first in panoramic image stitching and then in video stabilization. By the end of the book, you will have a much richer understanding of imaging, motion, machine learning, and the architecture of computer vision libraries and applications! Style and approach This book covers a combination of theory and practice. We examine blueprints for specific projects and discuss the principles behind these blueprints, in detail.

Computational Vision and Medical Image Processing IV Joao Manuel RS Tavares 2013-10-01 Computational Vision and Medical Image Processing. VIPIMAGE 2013 contains invited lectures and full papers presented at VIPIMAGE 2013 - IV ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing (Funchal, Madeira Island, Portugal, 14-16 October 2013). International contributions from 16 countries provide a comprehensive coverage of the current state-of-the-art in the fields of: 3D Vision; Computational Bioimaging and Visualization; Computational Vision and Image Processing applied to Dental Medicine; Computational Vision; Computer Aided Diagnosis, Surgery, Therapy, and Treatment; Data Interpolation, Registration, Acquisition and Compression; Image Processing and Analysis; Image Segmentation; Imaging of Biological Flows; Medical Imaging; Physics of Medical Imaging; Shape Reconstruction; Signal Processing; Simulation and Modeling; Software Development for Image Processing and Analysis; Telemedicine Systems and their Applications; Trabecular Bone Characterization; Tracking and Analysis of Movement; Virtual Reality. Related techniques covered in this book include the level set method, finite element method, modal analyses, stochastic methods, principal and independent components analysis and distribution models. Computational Vision and Medical Image Processing. VIPIMAGE 2013 is useful to academics, researchers and professionals in Biomechanics, Biomedical Engineering, Computational Vision (image processing and analysis), Computer Sciences, Computational Mechanics and Medicine.

Computer Vision - ECCV 2014 Workshops Lourdes Agapito 2015-03-18 The four-volume set LNCS 8925, 8926, 8927, and 8928 comprises the refereed post-proceedings of the Workshops that took place in conjunction with the 13th European Conference on Computer Vision, ECCV 2014, held in Zurich, Switzerland, in September 2014. The 203 workshop papers were carefully reviewed and selected for inclusion in the proceedings. They were presented at workshops with the following themes: where computer vision meets art; computer vision in vehicle technology; spontaneous facial behavior analysis; consumer depth cameras for computer vision; "chalearn" looking at people: pose, recovery, action/interaction, gesture recognition; video event categorization, tagging and retrieval towards big data; computer vision with local binary pattern variants; visual object tracking challenge; computer vision + ontology applies cross-disciplinary technologies; visual perception of affordance and functional visual primitives for scene analysis; graphical models in computer vision; light fields for computer vision; computer vision for road scene understanding and autonomous driving; soft biometrics; transferring and adapting source knowledge in computer vision; surveillance and re-identification; color and photometry in computer vision; assistive computer vision and robotics; computer vision problems in plant phenotyping; and non-rigid shape analysis and deformable image alignment. Additionally, a panel discussion on video segmentation is

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included. .

Creativity in Intelligent Technologies and Data Science Alla Kravets 2017-08-17 This book constitutes the refereed proceedings of the Second Conference on Creativity in Intelligent Technologies and Data Science, CIT&DS 2017, held in Volgograd, Russia, in September 2017. The 58 revised full papers and two keynote papers presented were carefully reviewed and selected from 194 submissions. The papers are organized in topical sections on Knowledge Discovery in Patent and Open Sources for Creative Tasks; Open Science Semantic Technologies; Computer Vision and Knowledge-Based Control; Pro-Active Modeling in Intelligent Decision Making Support; Data Science in Energy Management and Urban Computing; Design Creativity in CASE/CAI/CAD/PDM; Intelligent Internet of Services and Internet of Things; Data Science in Social Networks Analysis; Creativity and Game-Based Learning; Intelligent Assistive Technologies: Software Design and Application.

Travertine Allan Pentecost 2005-07-22 uring the spring of 1960, an uncle showed me a 'petrifying spring' near Plaxtol in Kent Dwhere twigs had been encased in a calcareous jacket. A twig was collected and having - cently been given I. Evan's Observer's Book of Geology by my parents, I found a photograph of another petrifying spring and an explanation of its origin. In those days, Derbyshire was too far for a holiday destination, and I took little further interest until a research studentship with Professor G. E. Fogg became available in 1971. Tony Fogg had recently moved to the University College of North Wales, Bangor and the research was to be into cyanobacterium mats, with fieldwork along the Red Sea coast. The fieldwork never materialised but my interest in algal mats had been aroused. A chance stroll along the Bangor shore revealed beautifully calcified cya- bacterium mats, and Tony generously allowed me to investigate these instead. The old Plaxtol collection was retrieved and yielded abundant cyanobacteria. It became apparent that here was a wealth of information about a rock whose formation was so rapid, that the process could be studied in days rather than years – an exceptional state of affairs. A search of the literature also revealed that the rock, a form of travertine, had other unusual features.

Developments in Medical Image Processing and Computational Vision João Manuel R. S. Tavares 2015-04-07 This book presents novel and advanced topics in Medical Image Processing and Computational Vision in order to solidify knowledge in the related fields and define their key stakeholders. It contains extended versions of selected papers presented in VipIMAGE 2013 – IV International ECCOMAS Thematic Conference on Computational Vision and Medical Image, which took place in Funchal, Madeira, Portugal, 14-16 October 2013. The twenty-two chapters were written by invited experts of international recognition and address important issues in medical image processing and computational vision, including: 3D vision, 3D visualization, colour quantisation, continuum mechanics, data fusion, data mining, face recognition, GPU parallelisation, image acquisition and reconstruction, image and video analysis, image clustering, image registration, image restoring, image segmentation, machine learning, modelling and simulation, object detection, object recognition, object tracking, optical flow, pattern recognition, pose estimation, and texture analysis. Different applications are addressed and described throughout the book, comprising: biomechanical studies, bio-structure modelling and simulation, bone characterization, cell tracking, computer-aided diagnosis, dental imaging, face recognition, hand gestures detection and recognition, human motion analysis, human-computer interaction, image and video understanding, image processing, image segmentation, object and scene reconstruction, object recognition and tracking, remote robot control, and surgery planning. This volume is of use to researchers, students, practitioners and manufacturers from several multidisciplinary fields, such as artificial intelligence, bioengineering, biology, biomechanics, computational mechanics, computational vision, computer graphics, computer science, computer vision, human motion, imagiology, machine learning, machine vision, mathematics, medical image, medicine, pattern recognition, and physics.

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ECG Masters' Collection, Volume 2 Mohammad Shenasa, MD 2018-02-15 Over 75 exceptional electrocardiogram case studies curated from the libraries of 60 internationally recognized master teachers of ECG interpretation are brought together in this one-of-a-kind resource for student and teacher alike. Organized by disease type, ECG case studies are presented in a clinical context followed by questions and discussion. Medical students, residents, fellows, physicians — anyone who is involved in caring for patients with various cardiovascular diseases and other systemic pathologies — will find this unique collection with a global perspective useful and practical in developing the skills necessary to reading ECGs.
FastSLAM Michael Montemerlo 2007-04-27 This monograph describes a new family of algorithms for the simultaneous localization and mapping (SLAM) problem in robotics, called FastSLAM. The FastSLAM-type algorithms have enabled robots to acquire maps of unprecedented size and accuracy, in a number of robot application domains and have been successfully applied in different dynamic environments, including a solution to the problem of people tracking.
Intelligent Computing Kohei Arai 2021-07-12 This book is a comprehensive collection of chapters focusing on the core areas of computing and their further applications in the real world. Each chapter is a paper presented at the Computing Conference 2021 held on 15-16 July 2021. Computing 2021 attracted a total of 638 submissions which underwent a double-blind peer review process. Of those 638 submissions, 235 submissions have been selected to be included in this book. The goal of this conference is to give a platform to researchers with fundamental contributions and to be a premier venue for academic and industry practitioners to share new ideas and development experiences. We hope that readers find this volume interesting and valuable as it provides the state-of-the-art intelligent methods and techniques for solving real-world problems. We also expect that the conference and its publications is a trigger for further related research and technology improvements in this important subject.
Visual Object Recognition Kristen Grauman 2011 The visual recognition problem is central to computer vision research. From robotics to information retrieval, many desired applications demand the ability to identify and localize categories, places, and objects. This tutorial overviews computer vision algorithms for visual object recognition and image classification. We introduce primary representations and learning approaches, with an emphasis on recent advances in the field. The target audience consists of researchers or students working in AI, robotics, or vision who would like to understand what methods and representations are available for these problems. This lecture summarizes what is and isn't possible to do reliably today, and overviews key concepts that could be employed in systems requiring visual categorization.
MultiMedia Modeling Cathal Gurrin 2014-01-02 The two-volume set LNCS 8325 and 8326 constitutes the thoroughly refereed proceedings of the 20th Anniversary International Conference on Multimedia Modeling, MMM 2014, held in Dublin, Ireland, in January 2014. The 46 revised regular papers, 11 short papers and 9 demonstration papers were carefully reviewed and selected from 176 submissions. 28 special session papers and 6 papers from Video Browser Showdown workshop are also included in the proceedings. The papers included in these two volumes cover a diverse range of topics including: applications of multimedia modelling, interactive retrieval, image and video collections, 3D and augmented reality, temporal analysis of multimedia content, compression and streaming. Special session papers cover the following topics: Mediadrom: artful post-TV scenarios, MM analysis for surveillance video and security applications, 3D multimedia computing and modeling, social geo-media analytics and retrieval, multimedia hyperlinking and retrieval.
Smart Algorithms for Multimedia and Imaging Michael N. Rychagov 2021-05-05 This book presents prospective, industrially proven methods and software solutions for storing, processing, and viewing multimedia content on digital cameras, camcorders, TV, and mobile devices. Most of the algorithms described here are implemented as systems on chip firmware or as

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software products and have low computational complexity and memory consumption. In the four parts of the book, which contains a total of 16 chapters, the authors address solutions for the conversion of images and videos by super-resolution, depth estimation and control and mono-to-stereo (2D to 3D) conversion; display applications by video editing; the real-time detection of sport episodes; and the generation and reproduction of natural effects. The practical principles of machine learning are illustrated using technologies such as image classification as a service, mobile user profiling, and automatic view planning with dictionary-based compressed sensing in magnetic resonance imaging. The implementation of these technologies in mobile devices is discussed in relation to algorithms using a depth camera based on a colour-coded aperture, the animated graphical abstract of an image, a motion photo, and approaches and methods for iris recognition on mobile platforms. The book reflects the authors' practical experience in the development of algorithms for industrial R&D and the commercialization of technologies. Explains digital techniques for digital cameras, camcorders, TV, mobile devices; Offers essential algorithms for the processing pipeline in multimedia devices and accompanying software tools; Features advanced topics on data processing, addressing current technology challenges.

Image Analysis and Recognition Aurélio Campilho 2014-10-09 The two volumes LNCS 8814 and 8815 constitute the thoroughly refereed proceedings of the 11th International Conference on Image Analysis and Recognition, ICIAR 2014, held in Vilamoura, Portugal, in October 2014. The 107 revised full papers presented were carefully reviewed and selected from 177 submissions. The papers are organized in the following topical sections: image representation and models; sparse representation; image restoration and enhancement; feature detection and image segmentation; classification and learning methods; document image analysis; image and video retrieval; remote sensing; applications; action, gestures and audio-visual recognition; biometrics; medical image processing and analysis; medical image segmentation; computer-aided diagnosis; retinal image analysis; 3D imaging; motion analysis and tracking; and robot vision.

Human Interaction, Emerging Technologies and Future Applications III Tareq Ahram 2020-08-05 This book reports on research and developments in human-technology interaction. A special emphasis is given to human-computer interaction, and its implementation for a wide range of purposes such as healthcare, aerospace, telecommunication, and education, among others. The human aspects are analyzed in detail. Timely studies on human-centered design, wearable technologies, social and affective computing, augmented, virtual and mixed reality simulation, human rehabilitation and biomechanics represent the core of the book. Emerging technology applications in business, security, and infrastructure are also critically examined, thus offering a timely, scientifically-grounded, but also professionally-oriented snapshot of the current state of the field. The book is based on contributions presented at the 3rd International Conference on Human Interaction and Emerging Technologies: Future Applications, IHIET 2020, held on August 27-29, 2020. It offers a timely survey and a practice-oriented reference guide to researchers and professionals dealing with design and/or management of the new generation of service systems.

Digital Hampi: Preserving Indian Cultural Heritage Anupama Mallik 2018-03-31 The book represents the culmination of a hugely successful heritage preservation project initiated by the Government of India's Department of Science and Technology. It presents extensive research on the digital preservation of the history, mythology, art, architecture and culture of the world heritage site Hampi in Karnataka, the seat of the Vijayanagara dynasty in medieval India. Further, the book introduces readers to a range of techniques developed by Indian technical research groups for digitally preserving both the tangible and intangible cultural heritage of the region. These techniques are sufficiently generic to be applied in heritage preservation efforts for other historical sites around the world as well. Technological

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advances have made it possible to not only create digital archives of these heritage artifacts, but to also share these resources for people to view, explore, experience, and analyze. This book showcases how cutting-edge technology can be combined with cultural and historical research to digitize and preserve heritage. It is the consolidation of work conducted under the Indian Digital Heritage project, a unique initiative of the Department of Science & Technology (DST), Government of India. The project involved collaboration between researchers in the areas of Technology, Computer Science, Architecture and the Humanities for the digital documentation and interpretation of India's tangible and intangible heritage. It highlights the art, architecture, and cultural legacy of the world heritage site of Hampi in Karnataka, the medieval capital of the 14th-16th century Vijayanagara dynasty. The contributors to this book are scientists and technology experts from prominent academic institutes in India such as the IITs (Indian Institutes of Technology), NIIT, and NID (National Institute of Design) working in collaboration with some of India's top architects, art historians, anthropologists, heritage groups and multi-disciplinary cultural institutions such as the National Institute of Advanced Studies (NIAS). Their papers will introduce readers to cutting-edge technologies from research areas such as computer vision, 3D modeling and artificial intelligence as they are employed to preserve art and culture in the digital domain. The book is divided into four parts. Part 1 details efforts and techniques for modeling and representing the tangible heritage of Hampi, such as the reconstruction of damaged structures, realistic walk-throughs, and haptic rendering. Part 2 includes chapters detailing the analysis and digital restoration of artifacts such as mural paintings, inscriptions and sculptures, as well as mobile-based visual search for artifacts. Part 3 includes chapters on conjectural re-constructions of the architectural life, social life and traditions of Hampi. Lastly, Part 4 addresses the knowledge-based archiving and exploration of cultural heritage.

New Development in Robot Vision Yu Sun 2014-09-26 The field of robotic vision has advanced dramatically recently with the development of new range sensors. Tremendous progress has been made resulting in significant impact on areas such as robotic navigation, scene/environment understanding, and visual learning. This edited book provides a solid and diversified reference source for some of the most recent important advancements in the field of robotic vision. The book starts with articles that describe new techniques to understand scenes from 2D/3D data such as estimation of planar structures, recognition of multiple objects in the scene using different kinds of features as well as their spatial and semantic relationships, generation of 3D object models, approach to recognize partially occluded objects, etc. Novel techniques are introduced to improve 3D perception accuracy with other sensors such as a gyroscope, positioning accuracy with a visual servoing based alignment strategy for microassembly, and increasing object recognition reliability using related manipulation motion models. For autonomous robot navigation, different vision-based localization and tracking strategies and algorithms are discussed. New approaches using probabilistic analysis for robot navigation, online learning of vision-based robot control, and 3D motion estimation via intensity differences from a monocular camera are described. This collection will be beneficial to graduate students, researchers, and professionals working in the area of robotic vision.

Human Activity Recognition and Prediction Yun Fu 2015-12-23 This book provides a unique view of human activity recognition, especially fine-grained human activity structure learning, human-interaction recognition, RGB-D data based action recognition, temporal decomposition, and causality learning in unconstrained human activity videos. The techniques discussed give readers tools that provide a significant improvement over existing methodologies of video content understanding by taking advantage of activity recognition. It links multiple popular research fields in computer vision, machine learning, human-centered computing, human-computer interaction, image classification, and pattern

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recognition. In addition, the book includes several key chapters covering multiple emerging topics in the field. Contributed by top experts and practitioners, the chapters present key topics from different angles and blend both methodology and application, composing a solid overview of the human activity recognition techniques.
Humanoid Robotics: A Reference Prahlad Vadakkepat 2017-02-14 Humanoid Robotics provides a comprehensive compilation of developments in the conceptualization, design and development of humanoid robots and related technologies. Human beings have built the environment they occupy (living spaces, instruments and vehicles) to suit two-legged systems. Building systems, especially in robotics, that are compatible with the well-established, human-based surroundings and which could naturally interact with humans is an ultimate goal for all researches and engineers. Humanoid Robots are systems (i.e. robots) which mimic human behavior. Humanoids provide a platform to study the construction of systems that behave and interact like humans. A broad range of applications ranging from daily housework to complex medical surgery, deep ocean exploration, and other potentially dangerous tasks are possible using humanoids. In addition, the study of humanoid robotics provides a platform to understand the mechanisms and offers a physical visual of how humans interact, think, and react with the surroundings and how such behaviors could be reassembled and reconstructed. Currently, the most challenging issue with bipedal humanoids is to make them balance on two legs, The purportedly simple act of finding the best balance that enables easy walking, jumping and running requires some of the most sophisticated development of robotic systems- those that will ultimately mimic fully the diversity and dexterity of human beings. Other typical human-like interactions such as complex thought and conversations on the other hand, also pose barriers for the development of humanoids because we are yet to understand fully the way in which we humans interact with our environment and consequently to replicate this in humanoids.
Computer Vision – ECCV 2016 Bastian Leibe 2016-09-16 The eight-volume set comprising LNCS volumes 9905-9912 constitutes the refereed proceedings of the 14th European Conference on Computer Vision, ECCV 2016, held in Amsterdam, The Netherlands, in October 2016. The 415 revised papers presented were carefully reviewed and selected from 1480 submissions. The papers cover all aspects of computer vision and pattern recognition such as 3D computer vision; computational photography, sensing and display; face and gesture; low-level vision and image processing; motion and tracking; optimization methods; physicsbased vision, photometry and shape-from-X; recognition: detection, categorization, indexing, matching; segmentation, grouping and shape representation; statistical methods and learning; video: events, activities and surveillance; applications. They are organized in topical sections on detection, recognition and retrieval; scene understanding; optimization; image and video processing; learning; action activity and tracking; 3D; and 9 poster sessions.
OpenCV Essentials Oscar Deniz Suarez 2014-08-25 This book is intended for C++ developers who want to learn how to implement the main techniques of OpenCV and get started with it quickly. Working experience with computer vision / image processing is expected.
Hawaiian Volcanoes Rebecca Carey 2015-02-20 Hawaiian Volcanoes, From Source to Surface is the outcome of an AGU Chapman Conference held on the Island of Hawai‘i in August 2012. As such, this monograph contains a diversity of research results that highlight the current understanding of how Hawaiian volcanoes work and point out fundamental questions requiring additional exploration. Volume highlights include: Studies that span a range of depths within Earth, from the deep mantle to the atmosphere Methods that cross the disciplines of geochemistry, geology, and geophysics to address issues of fundamental importance to Hawai‘i’s volcanoes Data for use in comparisons with other volcanoes, which can benefit from, and contribute to, a better understanding of Hawai‘i Discussions of the current issues that need to be addressed for a better understanding of Hawaiian volcanism Hawaiian Volcanoes, From Source to Surface will

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be a valuable resource not only for researchers studying basaltic volcanism and scientists generally interested in volcanoes, but also students beginning their careers in geosciences. This volume will also be of great interest to igneous petrologists, geochemists, and geophysicists.

Level Set Methods and Dynamic Implicit Surfaces Stanley Osher 2006-04-06 Very hot area with a wide range of applications; Gives complete numerical analysis and recipes, which will enable readers to quickly apply the techniques to real problems; Includes two new techniques pioneered by Osher and Fedkiw; Osher and Fedkiw are internationally well-known researchers in this area

Computer Vision for Visual Effects Richard J. Radke 2013 This book explores the fundamental computer vision principles and state-of-the-art algorithms used to create cutting-edge visual effects for movies and television. It describes classical computer vision algorithms and recent developments, features more than 200 original images, and contains in-depth interviews with Hollywood visual effects artists that tie the mathematical concepts to real-world filmmaking.

Multiple View Geometry in Computer Vision Richard Hartley 2004-03-25 A basic problem in computer vision is to understand the structure of a real world scene given several images of it. Techniques for solving this problem are taken from projective geometry and photogrammetry. Here, the authors cover the geometric principles and their algebraic representation in terms of camera projection matrices, the fundamental matrix and the trifocal tensor. The theory and methods of computation of these entities are discussed with real examples, as is their use in the reconstruction of scenes from multiple images. The new edition features an extended introduction covering the key ideas in the book (which itself has been updated with additional examples and appendices) and significant new results which have appeared since the first edition. Comprehensive background material is provided, so readers familiar with linear algebra and basic numerical methods can understand the projective geometry and estimation algorithms presented, and implement the algorithms directly from the book.

Robotics Research Henrik I. Christensen 2016-09-02 This volume presents a collection of papers presented at the 15th International Symposium of Robotic Research (ISRR). ISRR is the biennial meeting of the International Foundation of Robotic Research (IFRR) and its 15th edition took place in Flagstaff, Arizona on December 9 to December 12, 2011. As for the previous symposia, ISRR 2011 followed up on the successful concept of a mixture of invited contributions and open submissions. Therefore approximately half of the 37 contributions were invited contributions from outstanding researchers selected by the IFRR officers and the program committee, and the other half were chosen among the open submissions after peer review. This selection process resulted in a truly excellent technical program which featured some of the very best of robotic research. The program was organized around oral presentation in a single-track format and included for the first time a small number of interactive presentations. The symposium contributions contained in this volume report on a variety of new robotics research results covering a broad spectrum including perception, manipulation, grasping, vehicles and design, navigation, control and integration, estimation and SLAM.

Medical Image Computing and Computer-Assisted Intervention -- MICCAI 2015 Nassir Navab 2015-09-28 The three-volume set LNCS 9349, 9350, and 9351 constitutes the refereed proceedings of the 18th International Conference on Medical Image Computing and Computer-Assisted Intervention, MICCAI 2015, held in Munich, Germany, in October 2015. Based on rigorous peer reviews, the program committee carefully selected 263 revised papers from 810 submissions for presentation in three volumes. The papers have been organized in the following topical sections: quantitative image analysis I: segmentation and measurement; computer-aided diagnosis: machine learning; computer-aided diagnosis: automation; quantitative image analysis II: classification, detection, features, and morphology; advanced MRI: diffusion, fMRI, DCE;

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quantitative image analysis III: motion, deformation, development and degeneration; quantitative image analysis IV: microscopy, fluorescence and histological imagery; registration: method and advanced applications; reconstruction, image formation, advanced acquisition - computational imaging; modelling and simulation for diagnosis and interventional planning; computer-assisted and image-guided interventions.

Augmented Reality Dieter Schmalstieg 2016-06-01 Today's Comprehensive and Authoritative Guide to Augmented Reality By overlaying computer-generated information on the real world, augmented reality (AR) amplifies human perception and cognition in remarkable ways. Working in this fast-growing field requires knowledge of multiple disciplines, including computer vision, computer graphics, and human-computer interaction. Augmented Reality: Principles and Practice integrates all this knowledge into a single-source reference, presenting today's most significant work with scrupulous accuracy. Pioneering researchers Dieter Schmalstieg and Tobias Höllerer carefully balance principles and practice, illuminating AR from technical, methodological, and user perspectives. Coverage includes Displays: head-mounted, handheld, projective, auditory, and haptic Tracking/sensing, including physical principles, sensor fusion, and real-time computer vision Calibration/registration, ensuring repeatable, accurate, coherent behavior Seamless blending of real and virtual objects Visualization to enhance intuitive understanding Interaction–from situated browsing to full 3D interaction Modeling new geometric content Authoring AR presentations and databases Architecting AR systems with real-time, multimedia, and distributed elements This guide is indispensable for anyone interested in AR, including developers, engineers, students, instructors, researchers, and serious hobbyists.

Agricultural Robots Naoshi Kondo 2011 The history of Japan's agriculture is characterized by efforts to increase production and productivity. At the beginning of the 21st century, both public and private sector research has focused on developing ever-more sophisticated tools to address a wide-range of challenges facing the agricultural industry. An amazing array of automation technologies and robots have been developed in the process, to do everything from tilling fields to picking strawberries, from planting rice seedlings to autonomously weeding the paddies. This richly-illustrated volume surveys the results of these efforts, concisely and plainly presenting specific examples of the latest robotic mechanisms and practices for agricultural applications.

Time-of-Flight and Depth Imaging. Sensors, Algorithms and Applications Marcin Grzegorzek 2013-11-09 Cameras for 3D depth imaging, using either time-of-flight (ToF) or structured light sensors, have received a lot of attention recently and have been improved considerably over the last few years. The present techniques make full-range 3D data available at video frame rates, and thus pave the way for a much broader application of 3D vision systems. A series of workshops have closely followed the developments within ToF imaging over the years. Today, depth imaging workshops can be found at every major computer vision conference. The papers presented in this volume stem from a seminar on Time-of-Flight Imaging held at Schloss Dagstuhl in October 2012. They cover all aspects of ToF depth imaging, from sensors and basic foundations, to algorithms for low level processing, to important applications that exploit depth imaging. In addition, this book contains the proceedings of a workshop on Imaging New Modalities, which was held at the German Conference on Pattern Recognition in Saarbrücken, Germany, in September 2013. A state-of-the-art report on the Kinect sensor and its applications is followed by two reports on local and global ToF motion compensation and a novel depth capture system using a plenoptic multi-lens multi-focus camera sensor.

Human Interaction and Emerging Technologies Tareq Ahram 2019-07-24 This book reports on research and developments in human-technology interaction. A special emphasis is given to human-computer interaction, and its implementation for a wide range of purposes such as healthcare, aerospace, telecommunication, and education,

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among others. The human aspects are analyzed in detail. Timely studies on human-centered design, wearable technologies, social and affective computing, augmented, virtual and mixed reality simulation, human rehabilitation and biomechanics represent the core of the book. Emerging technology applications in business, security, and infrastructure are also critically examined, thus offering a timely, scientifically-grounded, but also professionally-oriented snapshot of the current state of the field. The book is based on contributions presented at the 1st International Conference on Human Interaction and Emerging Technologies, IHIET 2019, held on August 22-24, in Nice, France. It offers a timely survey and a practice-oriented reference guide to systems engineers, psychologists, sport scientists, physical therapists, as well as decision-makers, designing or dealing with the new generation of service systems. User Experience of a Social Media Based Knowledge Sharing System in Industry Work, Chapter of this book is available open access under a CC BY 4.0 license at link.springer.com

Computer Vision Simon J. D. Prince 2012-06-18 A modern treatment focusing on learning and inference, with minimal prerequisites, real-world examples and implementable algorithms.

OR 2.0 Context-Aware Operating Theaters, Computer Assisted Robotic Endoscopy, Clinical Image-Based Procedures, and Skin Image Analysis Danail Stoyanov 2018-10-01 This book constitutes the refereed joint proceedings of the First International Workshop on OR 2.0 Context-Aware Operating Theaters, OR 2.0 2018, 5th International Workshop on Computer Assisted Robotic Endoscopy, CARE 2018, 7th International Workshop on Clinical Image-Based Procedures, CLIP 2018, and the First International Workshop on Skin Image Analysis, ISIC 2018, held in conjunction with the 21st International Conference on Medical Imaging and Computer-Assisted Intervention, MICCAI 2018, in Granada, Spain, in September 2018. The 11 full papers presented at OR 2.0 2018, the 5 full papers presented at CARE 2018, the 8 full papers presented at CLIP 2018, and the 10 full papers presented at ISIC 2018 were carefully reviewed and selected. The OR 2.0 papers cover a wide range of topics such as machine vision and perception, robotics, surgical simulation and modeling, multi-modal data fusion and visualization, image analysis, advanced imaging, advanced display technologies, human-computer interfaces, sensors. The CARE papers cover topics to advance the field of computer-assisted and robotic endoscopy. The CLIP papers cover topics to fill gaps between basic science and clinical applications. The ISIC papers cover topics to facilitate knowledge dissemination in the field of skin image analysis, as well as to host a melanoma detection challenge, raising awareness and interest for these socially valuable tasks.

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