Fisheye Lens Designs And Their Relative Performance

Lens DesignCRC Press

Vision Sensors and Edge Detection book reflects a selection of recent developments within the area of vision sensors and edge detection. There are two sections in this book. The first section presents vision sensors with applications to panoramic vision sensors, wireless vision sensors, and automated vision sensor inspection, and the second one shows image processing techniques, such as, image measurements, image transformations, filtering, and parallel computing.

This book constitutes the refereed proceedings of the 7th Pacific Rim Conference on Multimedia, PCM 2006, held in Hangzhou, China in November 2006. The 116 revised papers presented cover a wide range of topics, including all aspects of multimedia, both technical and artistic perspectives and both theoretical and practical issues.

The state-of-the-art full-colored handbook gives a comprehensive introduction to the principles and the practice of calculation, layout, and understanding of optical systems and lens design. Written by reputed industrial experts in the field, this text introduces the user to the basic properties of optical systems, aberration theory, classification and characterization of systems, advanced simulation models, measuring of system quality and manufacturing issues. In this Volume Volume 4 presents a survey of optical systems, based on the principles of image formation, optical system setup and quality control which are covered by the first three volumes. Starting with the human eye, the chapters discuss all systems, from telescopes and binoculars to projection, spectroscopic and illumination systems. All these systems are characterized and described using coherent schemes and criteria to provide readers with a thorough background for their own developments. Other Volumes Volume 1: Fundamentals of Technical Optics Volume 2: Physical Image Formation Volume 3: Aberration Theory and Correction of Optical Systems Volume 5: Advanced Physical Optics

Camera Models and Fundamental Concepts Used in Geometric Computer Vision surveys the image acquisition methods used in computer vision and especially, of the vast number of camera models that have been proposed and investigated over the years, and points out similarities between different models.

A reference book on the art and techniques of virtual reality photography by one of the pioneers in the field, Scott Highton.The book includes sections on Photography Basics, Panoramic VR Imaging, Object VR Imaging, and Business Practices.Intended audience includes both professional and amateur photographers, as well as multimedia authors and designers.

In order to develop your artistic skills to the best of your ability, you first must understand the science and the fundamentals of photography. Whether you are a student of photography or a seasoned professional, this thoroughly updated edition of the classic text Basic Photographic Materials and Processes will provide all of the scientific information that you need. Full color throughout for the first time, this third edition covers new topics including digital resolution, digital sensor technology, scanner technology, color management, and tone reproduction.

The two volume set LNCS 4291 and LNCS 4292 constitutes the refereed proceedings of the Second International Symposium on Visual Computing, ISVC 2006, held in Lake Tahoe, NV, USA in November 2006. The 65 revised full papers and 56 poster papers presented together with 57 papers of ten special tracks were carefully reviewed and selected from more than 280 submissions. The papers cover the four main areas of visual computing.

The objective of this book is to bring out the Photographer in you, the amateur "snapshooter". And allow you to take memorable and professionally looking photographs through easy yet very effective steps, techniques and guidelines. Although part of this book covers the basic camera settings and modes, yet it delves into the essentials of the art of photography and aims at building or developing the photographic eye of the enthusiast amateur, YOU! Upon completion of the book, you will be able to compose and take appealing photographs with any camera and create that photograph that is worth a thousand words.

A concise introduction to lens design, including the fundamental theory, concepts, methods and tools used in the field. Covering all the essential concepts and providing suggestions for further reading at the end of each chapter, this book is an essential resource for graduate students working in optics and photonics.

The excellently received call for papers of the 13th Scandinavian Conference on Image Analysis, June 29–July 2 (SCIA 2003) resulted in the selected articles of this proceedings. Additionally the volume also contains invited contributions from – Ivar Austvoll, Stavanger University College (NO), – Lars B? a? ath, Halmstad University (SE), – Ewert Bengtsson, Uppsala University (SE), – Rasmus Larsen, Technical University of Denmark (DK), – Jussi Parkkinen, University of Joensuu (FI), – Pietro Perona, California Institute of Technology (US) which brings the total number of articles to 152. The theme of the papers are dominated by the categories – Feature extraction – Depth and surface – Medical image processing – Shape analysis – Segmentation and spatial grouping – Coding and representation – Motion analysis – Texture analysis – Color analysis – Indexing and categorization which also represent the topical groupings of this book. The particularly strong response to the feature extraction, depth and surface, and medical image processing themes makes us believe that these areas are c- rently expansive, partly because of the rich set of problems which remain to be addressed.

This book constitutes the refereed proceedings of the 5th International Conference on Rough Sets and Current Trends in Computing, RSCTC 2006, held in Kobe, Japan in November 2006. The 91 revised full papers presented together with five invited papers and two commemorative papers were carefully reviewed and selected from 332 submissions.

Whether you're a serious enthusiast, a student or a training professional, this book covers it all; from genres, cameras, lenses, digital imaging sensors and films to insights into photography as an industry.

The tenth edition of The Manual of Photography is an indispensable textbook for anyone who Presetous about photography. It is ideal if you want to gain insight into the underlying scientific principles of photography and digital imaging, whether you are a professional photographer, lab technician, researcher or student in the field, or simply an enthusiastic amateur. This comprehensive guide takes you from capture to output in both digital and film media, with sections on lens use, darkroom techniques, digital cameras and scanners, image editing techniques and processes, workflow, digital file formats and image archiving. This iconic text was first published in 1890 and has aided many thousands of photographers in developing their own techniques and understanding of the medium. Now in full colour, The Manual of Photography still retains its clear, reader-friendly style and is filled with images and illustrations demonstrating the key principles. We hope that it will not only give you the skills and know-how to take stunning photographs, but will also allow you to fully understand the science behind the creation of great images.

Wisdom from the best and the brightest in the industry, this visual effects bible belongs on the shelf of anyone working in or aspiring to work in VFX. The book covers techniques and solutions all VFX artists/producers/supervisors need to know, from breaking down a script and initial bidding, to digital character creation and compositing of both live-action and CG elements. In-depth lessons on stereoscopic moviemaking, color management and digital intermediates are included, as well as chapters on interactive games and full animation authored by artists from EA and Dreamworks respectively. From predproduction to acquisition to postproduction, every aspect of the VFX production workflow is given prominent coverage. VFX legends such as John Knoll, Mike Fink, and John Erland provide you with invaluable insight and lessons from the set, equipping you with everything you need to know about the entire visual effects workflow. Simply a must-have book for anyone working in or wanting to work in the VFX industry.

Computer Vision is the most important key in developing autonomous navigation systems for interaction with the environment. It also leads us to marvel at the functioning of our own vision system. In this book we have collected the latest applications of vision research from around the world. It contains both the conventional research areas like mobile robot navigation and map building, and more recent applications such as, micro vision, etc.The fist seven chapters contain the newer applications of vision like micro vision, grasping using vision, behavior based perception, inspection of railways and humanitarian demining. The later chapters deal with applications of vision in mobile robot navigation, camera calibration, object detection in vision search, map building, etc.

Langford's Advanced Photography is the only advanced photography guide a serious student or aspiring professional will ever need. In this eighth edition, Efthimia Bilissi continues in the footsteps of Michael Langford by combining an unrivalled level of technical detail with a straightforward writing style while simultaneously bringing the text firmly in to the digital era. This book covers the entire photographic process from a technical standpoint - not only detailing the 'how' but also explaining the 'why' that is so often missing from photography texts. From the workings of cameras, lenses, digital imaging sensors and software to new hot topics such as HDR imaging, digital asset management, and even running your own photography business, everything a serious photographer could need to extend their art into professional realms is covered. The book also benefits from a full glossary, charts and inspirational full color images throughout, with summaries and projects at the end of each chapter to reinforce the theory.

Displaying multiple levels of data visually has been proposed to address the challenge of limited screen space. Although many previous empirical studies have addressed different aspects of this question, the information visualization research community does not currently have a clearly articulated consensus on how, when, or even if displaying data at multiple levels is effective. To shed more light on this complex topic, we conducted a systematic review of 22 existing multi-level interface studies to extract high-level design guidelines. To facilitate discussion, we cast our analysis findings into a four-point decision tree: (1) When are multi-level displays useful? (2) What should the higher visual levels display? (3) Should the different visual levels be displayed simultaneously, or one at a time? (4) Should the visual levels be embedded in a single display, or separated into multiple displays? Our analysis resulted in three design guidelines: (1) the number of levels in display and data should match; (2) high visual levels should only display task-relevant information; (3) simultaneous display, rather than temporal switching, is suitable for tasks with multi-level answers. Table of Contents: Introduction / Terminology / Methodology / Summary of Studies / Decision 1: Single or Multi-level Interface? / Decision 2: How to Create the High-Level Displays? / Decision 3: Simultaneous or Temporal Displays of the Multiple Visual Levels / Decision 4: How to Spatially Arrange the Visual Levels, Embedded or Separate? / Limitations of Study / Design Recommendations / Discussion and Future Work

Advanced Photography is a practical book for students and serious enthusiasts who wish to achieve more professional looking results. From choosing lenses and camera equipment, to film types and technical data, lighting and tone control, processing management and colour printing; the book offers technical solutions and practical advice on all aspects of professional photography. The book has now been fully revised, to include not just the latest camera equipment and films, but explains how new digital methods can be used alongside silver halide systems - allowing the reader to benefit from the best practical features of each. Written as a companion volume to the international bestseller Basic Photography this book has enjoyed a long established reputation as a technical `bible' for new professionals. It will appeal to anyone wishing to improve on their basic skills in practical photography - enabling you to acheive a higher standard of work and to deal more professionally with clients, agents and suppliers. The late Michael Langford was Former Photography Course Director at the Royal College of Art in London. He was intimately involved with photography courses at all levels and as a result fully understood what a student needed. His other books for Focal Press are: 'Basic Photography', 'Story of Photography' and 'Starting Photography'.

Smartphones from an Applied Research Perspective highlights latest advancements of research undertaken in multidisciplinary fields where the smartphone plays a central role. Smartphone is synonymous to innovation in today's society. Very few visionaries predicted its social, cultural, technological and economic impacts, although the usage of smartphone is almost pervasive and transcendental. This book is meant for researchers and postgraduate students looking forward for hot topics for their final year projects, doctoral or even postdoctoral studies. Practitioners too will find food for thought and will surely be amazed by the broadness of the topics presented.

Achieve the Best Camera Design: Up-to-Date Information on MCMs Miniature camera modules (MCMs), such as webcams, have rapidly become ubiquitous in our day-to-day devices, from mobile phones to interactive TV systems. MCMs—or "smart" cameras—can zoom, adjust their frame rate automatically with illumination change, focus at different distances, compensate for hand shake, and transform captured images. With contributions from academics and field engineers, Smart Mini-Cameras discusses the structure, operation principles, applications, and future trends of miniature mobile cameras. It compares this technology with traditional digital still cameras and explains the specific requirements of MCM components (imposed by the size or type of application) in terms of optical design, image sensor, and functionalities. The book describes the implementation of several active functionalities, including liquid crystal auto focus (AF) and optical image stabilization (OIS). It also explores how new technologies, such

as the curved detector and transforming optics, are stimulating novel trends, including a miniature panoramic lens on mobile phones. By providing you with an understanding of the components and performance tradeoffs of MCMs, this book will help you achieve the best camera design. It also answers frequently asked questions, such as the importance of the number of megapixels in a mobile phone camera and the value of AF and OIS features.

WINNER OF THE 2001 KRASZNA-KRAUSZ PHOTOGRAPHY BOOK AWARD (Technical Photography category) The only definitive book to fully encompass the use of photography and imaging as tools in science, technology and medicine. It describes in one single volume the basic theory, techniques, materials, special equipment and applications for a wide variety of uses of photography, including: close up photography and photomacrography to spectral recording, surveillance systems, radiography and micro-imaging. This extensively illustrated photography 'bible' contains all the information you need, whether you are a scientist wishing to use photography for a specialist application, a professional needing to extend technical expertise, or a student wanting to broaden your knowledge of the applications of photography. The contents are arranged in three sections: · General Section, detailing the elements of the image capture process · Major Applications, describing the major applications of imaging · Specialist Applications, presenting an eclectic selection of more specialised but increasingly important applications Each subject is introduced with an outline of its development and contemporary importance, followed by explanations of essential theory and an overview of techniques and equipment. Mathematics is only used where necessary. Numerous applications and case studies are described. Comprehensive bibliographies and references are provided for further study.

With the demands of quality management and process control in an industrial environment machine vision is becoming an important issue. This handbook of machine vision is written by experts from leading companies in this field. It goes through all aspects of image acquisition and image processing. From the viewpoint of the industrial application the authors also elucidate in topics like illumination or camera calibration. Attention is paid to all hardware aspects, starting from lenses and camera systems to camera-computer interfaces. Besides the detailed hardware descriptions the necessary software is discussed with equal profoundness. This includes sections on digital image basics as well as image analysis and image processing. Finally the user is introduced to general aspects of industrial applications of machine vision, such as case studies and strategies for the conception of complete machine vision systems. With this handbook the reader will be enabled not only to understand up to date systems for machine vision but will also be qualified for the planning and evaluation of such technology.

This book focuses on Art and Design Education Research. Gathering 72 papers illustrated with diagrams and tables, they provide state-of-the-art information on infrastructure and sustainable issues in Art and Design, focusing on Design Industrial Applications, Visual Communication and New Media, Art Education Research, Cultural Studies, and the Social Implications of Art. They also offer detailed information on innovative research trends in Design Technology and Multimedia Design, as well as a compilation of interdisciplinary findings combining the Humanities and Quality of Life in Art and Design.

Comprised of 395 essays arranged alphabetically, most on individual objects, artifacts, techniques, and products, this is an up-to-date reference work for all those involved in teaching or researching the history of twentieth-century technology, as well as the serious general reader. The core of each of the main entries is a technical description, within a historical narrative, of about 1,000 words plus illustrations and further reading. There are also about 30 longer survey entries that that address broad questions of technological systems, such as the context in which the various technologies were developed, discussions of any controversies and schools of thought, comparisons between different political and economics systems, and the various ways in which different nations have attempted to make and apply science and technology policies.

There is no shortage of lens optimization software on the market to deal with today's complex optical systems for all sorts of custom and standardized applications. But all of these software packages share one critical flaw: you still have to design a starting solution. Continuing the bestselling tradition of the author's previous books, Lens Design, Fourth Edition is still the most complete and reliable guide for detailed design information and procedures for a wide range of optical systems. Milton Laikin draws on his varied and extensive experience, ranging from innovative cinematographic and special-effects optical systems to infrared and underwater lens systems, to cover a vast range of special-purpose optical systems and their detailed design and analysis. This edition has been updated to replace obsolete glass types and now includes several new designs and sections on stabilized systems, the human eye, spectrographic systems, and diffractive systems. A new CD-ROM accompanies this edition, offering extensive lens prescription data and executable ZEMAX files corresponding to figures in the text. Filled with sage advice and completely illustrated, Lens Design, Fourth Edition supplies hands-on guidance for the initial design and final optimization for a plethora of commercial, consumer, and specialized optical systems.

Proceedings of SPIE present the original research papers presented at SPIE conferences and other high-quality conferences in the broad-ranging fields of optics and photonics. These books provide prompt access to the latest innovations in research and technology in their respective fields. Proceedings of SPIE are among the most cited references in patent literature.

Learn the advantages and capabilities of medium-format cameras and examine all aspects of medium-format operations, including SLR, twin lens, panoramic, rangefinder, wide angle, press, and view cameras. Also explained and illustrated are lenses and their accessories, motor drives, films, flashes, filters, slides and slide projectors, and more. Includes black and white and color photographs and drawings to illustrate proper use of equipment and various techniques, effects, and possibilities that produce successful photographs with the best possible image quality. The medium format is truly the format in the middle. It combines many of the benefits of 35 mm photography with those of the large format, making a medium format system an excellent choice for almost all types of photography from candid action with a hand-held camera to critical studio work from a tripod. Special chapters are devoted to these different applications and the type of equipment that most likely meets your photography needs. This book explains clearly the medium format's benefits, advantages, and disadvantages and provides a comparison of the medium format to other formats so you can decide whether it is right for you and your photography.

Featuring over 700 references, equations, tables, and drawings, this highly lauded and best-selling reference emphasizes practical designs of over 30 lens systems, including single-element, two-element achromats, air-spaced triplets, projection lenses, and sophisticated wide-angle and zoom lenses. It comes with software that supplies starting solutions for computer optimization programs lens prescriptions and several shorter programs to compute the refractive index of glasses from a variety of manufacturers, create lens drawings, perform zoom computations, do test glass fitting, and calculate third-order solutions for single lenses, achromats, and triplets.

From its initial publication titled Laser Beam Scanning in 1985 to Handbook of Optical and Laser Scanning, now in its second edition, this reference has kept professionals and students at the forefront of optical scanning technology. Carefully and meticulously updated in each iteration, the book continues to be the most comprehensive scanning resource on the market. It examines the breadth and depth of subtopics in the field from a variety of perspectives. The Second Edition covers: Technologies such as piezoelectric devices Applications of laser scanning such as Ladar (laser radar) Underwater scanning and laser scanning in CTP As laser costs come down, and power and availability increase, the potential applications for laser scanning continue to increase. Bringing together the knowledge and experience of 26 authors from England, Japan and the United States, the book provides an excellent resource for understanding the principles of laser scanning. It illustrates the significance of scanning in society today

and would help the user get started in developing system concepts using scanning. It can be used as an introduction to the field and as a reference for persons involved in any aspect of optical and laser beam scanning.

July 02-04, 2018 Berlin, Germany Key Topics : Optical Imaging and Sensing, Lasers and Nonlinear Optics, Optoelectronics, Applied Industrial Optics, Fiber Laser Technology, Photonics, Nano and Qauntum Sciences, Optical Technologies, Lasers in Medicine, Optics in Astronomy and Astrophysics, Optical Communications and Networking, Quantum Optics, Laser Systems, Surface Enhanced Spectroscopy, Optical Fiber, Latest Technologies in Photonics and Lasers, Industrial Applications of Laser and Photonics-Overview, Challenges and Current Trends,

A large part of this book is devoted to a study of possible design procedures for various types of lens or mirror systems, with fully worked examples of each. The reader is urged to follow the logic of these examples and be sure that he understands what is happening, noticing particularly how each available degree of freedom is used to control one aberration. Not every type of lens has been considered, of course, but the design techniques illustrated here can readily be applied to the design of other more complex systems. It is assumed that the reader has access to a small computer to help with the ray tracing, otherwise he may find the computations so time-consuming that he is liable to lose track of what he is trying to accomplish.

Discover the great advantages and benefits of working in the medium film format or with the large digital sensor units in Hasselblad digital cameras and digital backs. Presented in an easily accessible format, this book shows the working and manipulation of the various cameras. Detailed illustrations dissect the equipment and provide insight into the ways in which these superb cameras and lenses are best utilized to create professional quality images. This edition of the Manual will bring you up to date with the latest features available within the popular Hasselblad camera systems emphasizing that camera and lens are the most important tools for creating exciting images whether you work digitally or with film. The complete Hasselblad camera system is discussed by renowned author and Hasselblad insider, Ernst Wildi, who provides a solid foundation of both traditional photography and digital capture techniques. Inside you'll also find inspiring photographs from well-known photographers, illustrating a variety of photographic techniques using a Hasselblad camera.

Fundamentals of Wearable Computers and Augmented Reality presents a broad coverage of the technologies and interface design issues associated with wearable computers and augmented reality displays both rapidly developing fields in computer science, engineering, and human interface design. This book presents concepts related to the use and underlying technologies of augmented reality and wearable computer systems. There are many application areas for this technology, such as medicine, manufacturing, training, and recreation. Wearable computers will allow a much closer association of information with the user than is possible with traditional desktop computers. This book addresses an important aspect of wearable computers and augmented reality, either from the conceptual or from an application framework. Given the wide coverage of topics on issues related to the display of computer-generated images in the environment, this book can be used as a text for computer science, computer engineering, and interface design courses.

Which lens should I buy for my camera? It's such a simple question, but choosing the right lens or lenses is actually one of the most important photographic decisions you can make. Nothing affects the quality of a photo more than the lens. It's no longer just about the megapixels-it's the glass that makes all the difference! Many first-time buyers of DSLRs don't venture past the basic lens included in the box. While some are reluctant to spend more money, others are confused by all the buzzwords or are overwhelmed by all the choices out there. It's really a shame, because interchangeable lenses give you amazing scope for quality photography. Take in vast sweeping scenes with a wide angle lens. Capture faraway birds with a telephoto lens. Examine the tiniest detail of a flower with a macro lens. Record the perfect portrait with a prime lens. Anything is possible when you choose the right lens for the job! This book isn't a simple catalogue of available lenses. New products are coming out all the time, and comparing specific lenses can be difficult. Instead, author N.K. Guy gives you all the information you need to make smart buying decisions. Optical technology is demystified, arcane terminology is decoded, and practical tips are provided. The Lens will help you build the perfect lens collection to suit your needs-now and in the future.