
Fisheye Lens Designs And Their Relative Performance

A History of the Photographic Lens
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 Advances in Sensors: Reviews, Vol. 7: Physical and Chemical Sensors: Design, Applications & Networks.
 Optical Imaging and Photography
 Langford's Advanced Photography
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 Improving Your Digital Photography
 Applied Photographic Optics
 Smartphones from an Applied Research Perspective
 Scientific Photography and Applied Imaging
 Introduction to Lens Design
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 Basic Photographic Materials and Processes

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[A History of the Photographic Lens](#) Routledge

- Thoroughly revised and expanded to reflect the substantial changes in the field since its publication in 1978 - Strong emphasis on how to effectively use software design packages, indispensable to today's lens designer - Many new lens design problems and examples - ranging from simple lenses to complex zoom lenses and mirror systems - give insight for both the newcomer and specialist in the field Rudolf Kingslake is regarded as the American father of lens design; his book, not revised since its publication in 1978, is viewed as a classic in the field. Naturally, the area has developed considerably since the book was published, the most obvious changes being the availability of powerful lens design software packages, theoretical advances, and new surface fabrication technologies. This book provides the skills and knowledge to move into the exciting world of contemporary lens design and develop practical lenses needed for the great variety of 21st-century applications. Continuing to focus on fundamental methods and procedures of lens design, this revision by R. Barry Johnson of a classic modernizes symbology and nomenclature, improves conceptual clarity, broadens the study of aberrations, enhances discussion of multi-mirror systems, adds tilted and decentered systems with eccentric pupils, explores use of aberrations in the optimization process, enlarges field flattener concepts, expands discussion of image analysis, includes many new exemplary examples to illustrate concepts, and much more. Optical engineers working in lens design will find this book an invaluable guide to lens design in

traditional and emerging areas of application; it is also suited to advanced undergraduate or graduate course in lens design principles and as a self-learning tutorial and reference for the practitioner. Rudolf Kingslake (1903-2003) was a founding faculty member of the Institute of Optics at The University of Rochester (1929) and remained teaching until 1983. Concurrently, in 1937 he became head of the lens design department at Eastman Kodak until his retirement in 1969. Dr. Kingslake published numerous papers, books, and was awarded many patents. He was a Fellow of SPIE and OSA, and an OSA President (1947-48). He was awarded the Progress Medal from SMPTE (1978), the Frederic Ives Medal (1973), and the Gold Medal of SPIE (1980). R. Barry Johnson has been involved for over 40 years in lens design, optical systems design, and electro-optical systems engineering. He has been a faculty member at three academic institutions engaged in optics education and research, co-founder of the Center for Applied Optics at the University of Alabama in Huntsville, employed by a number of companies, and provided consulting services. Dr. Johnson is an SPIE Fellow and Life Member, OSA Fellow, and an SPIE President (1987). He published numerous papers and has been awarded many patents. Dr. Johnson was founder and Chairman of the SPIE Lens Design Working Group (1988-2002), is an active Program Committee member of the International Optical Design Conference, and perennial co-chair of the annual SPIE Current Developments in Lens Design and Optical Engineering Conference. - Thoroughly revised and expanded to reflect the substantial changes in the field since its publication in 1978 - Strong emphasis on how to effectively use software design packages, indispensable to today's lens designer - Many new lens design problems and examples - ranging from simple lenses to complex zoom lenses and mirror systems - give insight for both the newcomer and specialist in the field [The Manual of Photography](#) CRC Press

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.

Effective Surveillance for Homeland Security Taylor & Francis

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.

Imaging Optics CRC Press

A must for serious photographers

Image Analysis Elsevier

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.

Applied Photographic Optics Academic Press

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.

The Physics and Art of Photography, Volume 1 CRC Press

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.

Current Developments in Lens Design and Optical Engineering VIII Elsevier

Selected by the American Library Association's 'Choice' magazine as "best technical book", the first edition of this book soon established itself as the standard reference work on all aspects of photographic lenses and associated optical systems. This is unsurprising, as Sidney Ray provides a complete, comprehensive reference source for anyone wanting information on photographic lenses, from the student to the practitioner or specialist working with visual and digital media worldwide. This third edition has been fully revised and expanded to include the rapid progress in the last decade in optical technology and advances in relevant electronic and digital forms of imaging. Every chapter has been revised and expanded using new figures and photographs as appropriate, as well as extended bibliographies. New chapters include details of filters, measurements from images and the optical systems of digital cameras. Details of electronic and digital imaging have been integrated throughout. More information is given on topics such as aspherics, diffractive optics, ED glasses, image stabilization, optical technology, video projection and new types of lenses. A selection of the contents includes chapters on: optical theory, aberrations, auto focus, lens testing, depth of field, development of photographic lenses, general properties of lenses, wide-angle lenses, telephoto lenses, video lenses, viewfinder systems, camera movements, projection systems and 3-D systems.

A Guide to Visual Multi-Level Interface Design From Synthesis of Empirical Study Evidence CRC Press

The award-winning VES Handbook of Visual Effects remains the most complete guide to visual effects techniques and best practices available today. This new edition has been updated to include the latest, industry-standard techniques, technologies, and workflows for the ever-evolving fast paced world of visual effects. The Visual Effects Society (VES) tasked the original authors to update their areas of expertise, such as AR/VR Moviemaking, Color Management, Cameras, VFX Editorial, Stereoscopic and the Digital Intermediate, as well as provide detailed chapters on interactive games and full animation. Additionally, 56 contributors share their best methods, tips, tricks, and shortcuts developed through decades of trial and error and real-world, hands-on experience. This third edition has been expanded to feature lessons on 2.5D/3D Compositing; 3D Scanning; Digital Cinematography; Editorial Workflow in Animated and Visual Effects Features; Gaming updates; General Geometry Instancing; Lens Mapping for VFX; Native Stereo; Real-Time VFX and Camera Tracking; Shot/Element Pulls and Delivery to VFX; Techvis; VFX Elements and Stereo; Virtual Production; and VR/AR (Virtual Reality / Augmented Reality). A must-have for anyone working in or aspiring to work in visual effects, The VES Handbook of Visual Effects, Third Edition covers essential techniques and solutions for all VFX artists, producers, and supervisors, from pre-production to digital character creation, compositing of both live-action and CG elements, photorealistic techniques, and much more. With subjects and techniques clearly and definitively presented in beautiful four-color, this handbook is a vital resource for any serious VFX artist.

Close-Range Photogrammetry and 3D Imaging Morgan & Claypool Publishers

Over the last decade, the usage of unmanned systems such as Unmanned Aerial Vehicles (UAVs), Unmanned Surface Vessels (USVs) and Unmanned Ground Vehicles (UGVs) has increased drastically, and there is still a rapid growth. Today, unmanned systems are being deployed in many daily

operations, e.g. for deliveries in remote areas, to increase efficiency of agriculture, and for environmental monitoring at sea. For safety reasons, unmanned systems are often the preferred choice for surveillance missions in hazardous environments, e.g. for detection of nuclear radiation, and in disaster areas after earthquakes, hurricanes, or during forest fires. For safe navigation of the unmanned systems during their missions, continuous and accurate global localization and attitude estimation is mandatory. Over the years, many vision-based methods for position estimation have been developed, primarily for urban areas. In contrast, this thesis is mainly focused on vision-based methods for accurate position and attitude estimates in natural environments, i.e. beyond the urban areas. Vision-based methods possess several characteristics that make them appealing as global position and attitude sensors. First, vision sensors can be realized and tailored for most unmanned vehicle applications. Second, geo-referenced terrain models can be generated worldwide from satellite imagery and can be stored onboard the vehicles. In natural environments, where the availability of geo-referenced images in general is low, registration of image information with terrain models is the natural choice for position and attitude estimation. This is the problem area that I addressed in the contributions of this thesis. The first contribution is a method for full 6DoF (degrees of freedom) pose estimation from aerial images. A dense local height map is computed using structure from motion. The global pose is inferred from the 3D similarity transform between the local height map and a digital elevation model. Aligning height information is assumed to be more robust to season variations than feature-based matching. The second contribution is a method for accurate attitude (pitch and roll angle) estimation via horizon detection. It is one of only a few methods that use an omnidirectional (fisheye) camera for horizon detection in aerial images. The method is based on edge detection and a probabilistic Hough voting scheme. The method allows prior knowledge of the attitude angles to be exploited to make the initial attitude estimates more robust. The estimates are then refined through registration with the geometrically expected horizon line from a digital elevation model. To the best of our knowledge, it is the first method where the ray refraction in the atmosphere is taken into account, which enables the highly accurate attitude estimates. The third contribution is a method for position estimation based on horizon detection in an omnidirectional panoramic image around a surface vessel. Two convolutional neural networks (CNNs) are designed and trained to estimate the camera orientation and to segment the horizon line in the image. The MOSSE correlation filter, normally used in visual object tracking, is adapted to horizon line registration with geometric data from a digital elevation model. Comprehensive field trials conducted in the archipelago demonstrate the GPS-level accuracy of the method, and that the method can be trained on images from one region and then applied to images from a previously unvisited test area. The CNNs in the third contribution apply the typical scheme of convolutions, activations, and pooling. The fourth contribution focuses on the activations and suggests a new formulation to tune and optimize a piecewise linear activation function during training of CNNs. Improved classification results from experiments when tuning the activation function led to the introduction of a new activation function, the Shifted Exponential Linear Unit (ShELU).

Interaction Design for Complex Problem Solving BoD – Books on Demand

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.

Lens Design CRC Press

Effective Surveillance for Homeland Security: Balancing Technology and Social Issues provides a comprehensive survey of state-of-the-art methods and tools for the surveillance and protection of citizens and critical infrastructures against natural and deliberate threats. Focusing on current technological challenges involving multi-disciplinary problem analysis and systems engineering approaches, it provides an overview of the most relevant aspects of surveillance systems in the framework of homeland security. Addressing both advanced surveillance technologies and the related socio-ethical issues, the book consists of 21 chapters written by international experts from the various sectors of homeland security. Part I, *Surveillance and Society*, focuses on the societal dimension of surveillance—stressing the importance of societal acceptability as a precondition to any surveillance system. Part II, *Physical and Cyber Surveillance*, presents advanced technologies for surveillance. It considers developing technologies that are part of a framework whose aim is to move from a simple collection and storage of information toward proactive systems that are able to fuse several information sources to detect relevant events in their early incipient phase. Part III, *Technologies for Homeland Security*, considers relevant applications of surveillance systems in the framework of homeland security. It presents real-world case studies of how innovative technologies can be used to effectively improve the security of sensitive areas without violating the rights of the people involved. Examining cutting-edge research topics, the book provides you with a comprehensive understanding of the technological, legislative, organizational, and management issues related to surveillance. With a specific focus on privacy, it presents innovative solutions to many of the issues that remain in the quest to balance security with the preservation of privacy that society demands.

Lens Design Fundamentals Taylor & Francis

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.

Vision-based Localization and Attitude Estimation Methods in Natural Environments Cambridge University Press

The tenth edition of *The Manual of Photography* is an indispensable textbook for anyone who is serious 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. Not only giving you the skills and know-how to take stunning photographs, but will also allowing you to fully understand the science behind the creation of great images.

Photography with Tilt and Shift Lenses BoD – Books on Demand

This comprehensive and self-contained text for researchers and professionals presents a detailed account of optical imaging from the viewpoint of both ray and wave optics.

Visualization Analysis and Design CRC Press

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.

Vision Systems Springer Science & Business Media

Learn How to Design Effective Visualization Systems Visualization Analysis and Design provides a systematic, comprehensive framework for thinking about visualization in terms of principles and design choices. The book features a unified approach encompassing information visualization techniques for abstract data, scientific visualization techniques

Lens Design, Third Edition, Lens Design

Lens Design CRC Press

Physically Based Rendering Linköping University Electronic Press

This updated edition describes both the mathematical theory behind a modern photorealistic rendering system as well as its practical implementation. Through the ideas and software in this book, designers will learn to design and employ a full-featured rendering system for creating stunning imagery. Includes a companion site complete with source code for the rendering system described in the book, with support for Windows, OS X, and Linux.

Optical System Design The Crowood Press

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.

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