# Pengolahan Citra Digital Reduksi Noise

Citra (image) adalah kumpulan dari titik yang mempunyai identitas tertentu untuk membentuk satu kesatuan perpaduan yang mempunyai arti, baik secara artistik maupun intrinsik. Citra yang baik adalah yang dapat menampilkan keindahan gambar (artistik) serta kejelasan gambar untuk penganalisaan dan maksud-maksud lainnya (intrinsik). Citra yang dimaksud disini adalah citra statis grayscale PNG yang memiliki noise diatas 10% dan tingkat kontras yang rendah. Peningkatan mutu citra (Image Enhancement) merupakan hal yang menarik dengan berbagai tantangan yang melekat pada pengolahan citra, hal ini juga berlaku pada peningkatan kontras ataupun perbaikan kualitas citra. Beberapa citra dapat mengalami penurunan kualitas menjadi lebih gelap bahkan rusak dapat disebabkan adanya derau (noise) ataupun karena kerusakan pada alat perekam yang mengakibatkan objek pada citra menjadi tidak jelas sehingga menyulitkan untuk diolah lagi. Jenis noise gaussian dan impulse noise, lebih dikenal salt and pepper noise berupa titik hitam atau putih merupakan noise yang sering ditemukan pada citra. Selain itu tingkat kontras dari citra juga menjadi penting karena mempengaruhi kualitas citra khususnya isi dari citra, sehingga terlihat adanya kebutuhan akan kajian yang lebih mendalam untuk peningkatan kualitas citra dari segi kontras dan penghilangan noise (salt and pepper).

The Computer Aide Passbook(R) prepares you for your test by allowing you to take practice exams in the subjects you need to study. It provides hundreds of questions and answers in the areas that will likely be covered on your upcoming exam, including but not limited to: operating and electronic computer and peripheral equipment attached or communicating with an electronic computer; observing and controlling the operation of computer equipment; clerical abilities; record keeping; understanding and interpreting written material; arithmetic reasoning; and other related areas.

Pengolahan Citra DigitalPenerbit Andi

This book brings together a collection of invited interdisciplinary persp- tives on the recent topic of Object-based Image Analysis (OBIA). Its c- st tent is based on select papers from the 1 OBIA International Conference held in Salzburg in July 2006, and is enriched by several invited chapters. All submissions have passed through a blind peer-review process resulting in what we believe is a timely volume of the highest scientific, theoretical and technical standards. The concept of OBIA first gained widespread interest within the GIScience (Geographic Information Science) community circa 2000, with the advent of the first commercial software for what was then termed ‘obje- oriented image analysis’. However, it is widely agreed that OBIA builds on older segmentation, edge-detection and classification concepts that have been used in remote sensing image analysis for several decades. Nevert- less, its emergence has provided a new critical bridge to spatial concepts applied in multiscale landscape analysis, Geographic Information Systems (GIS) and the synergy between image-objects and their radiometric char- teristics and analyses in Earth Observation data (EO).

Radar, like most well developed areas, has its own vocabulary. Words like Doppler frequency, pulse compression, mismatched filter, carrier frequency, in-phase, and quadrature have specific meaning to the radar engineer. In fact, the word radar is actually an acronym for RAdio Detection And Rang ing. Even though these words are well defined, they can act as road blocks which keep people without a radar background from utilizing the large amount of data, literature, and expertise within the radar community. This is unfortunate because the use of digital radar processing techniques has made possible the analysis of radar signals on many general purpose digi tal computers. Of special interest are the surface mapping radars, such as the Seasat and the shuttle imaging radars, which utilize a technique known as synthetic aperture radar (SAR) to create high resolution images (pic tures). This data appeals to cartographers, agronomists, oceanographers, and others who want to perform image enhancement, parameter estima tion, pattern recognition, and other information extraction techniques on the radar imagery. The first chapter presents the basics of radar processing: techniques for calculating range (distance) by measuring round trip propagation times for radar pulses. This is the same technique that sightseers use when calculat ing the width of a canyon by timing the round trip delay using echoes. In fact, the corresponding approach in radar is usually called the pulse echo technique.

This authoritative book -- discussing CAD/CAM in detail from the user's rather than the vendor's point of view -- provides the valuable information engineers and managers need for optimal CAD/CAM implementation and use. It introduces CAD/CAM hardware and software, and demonstrates how to select a CAD/CAM solution for your company's specific requirements ... explains how to implement a CAD/CAM system, with special attention to training and education, and with useful checklists ... describes ongoing systems ... presents an informative overview of CAD/CAM's industrial use ... and details case studies of CAD/CAM applications, representing a broad range of companies throughout the world, in various industrial sectors, at different stages of CAD/CAM use. Complete with a glossary that clearly defines all CAD/CAM terminology, this essential reference source is mandatory reading for mechanical, manufacturing, automotive and aerospace engineers and managers; CAD/CAM system vendors; computer manufacturers; graduate-level courses in mechanical and manufacturing engineering, CAD/CAM, and computer science; and professional seminars in mechanical, manufacturing, and automotive engineering. Book jacket.

Build Machine Learning models with a sound statistical understanding. About This Book Learn about the statistics behind powerful predictive models with p-value, ANOVA, and F- statistics. Implement statistical computations programmatically for supervised and unsupervised learning through K-means clustering. Master the statistical aspect of Machine Learning with the help of this example-rich guide to R and Python. Who This Book Is For This book is intended for developers with little to no background in statistics, who want to implement Machine Learning in their systems. Some programming knowledge in R or Python will be useful. What You Will Learn Understand the Statistical and Machine Learning fundamentals necessary to build models Understand the major differences and parallels between the statistical way and the Machine Learning way to solve problems Learn how to prepare data and feed models by using the appropriate Machine Learning algorithms from the more-than-adequate R and Python packages Analyze the results and tune the model appropriately to your own predictive goals Understand the concepts of required statistics for Machine Learning Introduce yourself to necessary fundamentals required for building supervised & unsupervised deep learning models Learn reinforcement learning and its application in the field of artificial intelligence domain In Detail Complex statistics in Machine Learning worry a lot of developers. Knowing statistics helps you

build strong Machine Learning models that are optimized for a given problem statement. This book will teach you all it takes to perform complex statistical computations required for Machine Learning. You will gain information on statistics behind supervised learning, unsupervised learning, reinforcement learning, and more. Understand the real-world examples that discuss the statistical side of Machine Learning and familiarize yourself with it. You will also design programs for performing tasks such as model, parameter fitting, regression, classification, density collection, and more. By the end of the book, you will have mastered the required statistics for Machine Learning and will be able to apply your new skills to any sort of industry problem. Style and approach This practical, step-by-step guide will give you an understanding of the Statistical and Machine Learning fundamentals you'll need to build models.

For more than 25 years, The Only EKG Book You'll Ever Need has lived up to its name as an easy-to-understand, practical, and clear reference for everyday practice and clinical decision making. Dr. Thaler's ability to simplify complex concepts makes this an ideal tool for students, teachers, and practitioners at all levels who need to be competent in understanding how to read an EKG. Clear illustrations, clinical examples, and case studies help you quickly learn how identify and interpret hypertrophy and enlargement, arrhythmias, conduction blocks, pre-excitation syndromes, myocardial infarction, and more. Features: New material throughout and shortened and simplified explanations ensure that you're reading the most up-to-date, clear, and accurate text available. More than 200 facsimiles of EKG strips provide greater insight into normal and abnormal tracings, increasing your understanding of their clinical significance. Clinical examples, interactive questions, and case studies put key concepts into real-world context so that what you learn is immediately usable. Full-color, simple illustrations highlight important concepts and make challenging concepts easier to understand. A companion ebook, with fully searchable text and interactive question bank, makes this a great resource for students, teachers, and practitioners.

Constitutes the refereed proceedings of the 10th International IFIP TC 6 Networking Conference held in Valencia, Spain, in May 2011. This title features the papers that are organized in topical sections on anomaly detection, content management, DTN and sensor networks, energy efficiency, mobility modeling, network science, and path diversity.

Planning is a critical stage of radiotherapy. Careful consideration of the complex variables involved and critical assessment of the techniques available are fundamental to good and effective practice. First published in 1985, Practical Radiotherapy Planning has, over three editions, established itself as the popular choice for the trainee raditation oncologist and radiographer, providing the 'nuts and bolts' of planning in a practical and accessible manner. This fourth edition encompasses a wealth of new material, reflecting the radical change in the practice of radiotherapy in recent years. The information contained within the introductory chapters has been expanded and brought up to date, and a new chapter on patient management has been added. CT stimulators, MLC shieldings and dose profiles, principles of IMRT, and use of MRI, PET and ultrasound are all included, amongst other new developments in this field. The aim of the book remains unchanged. Complexity of treatment planning has increased greatly, but the fourth edition continues to emphasise underlying principles of treatment that can be applied for conventional, conformal and novel treatments, taking into account advances in imaging and treatment delivery.

Diabetes and Fundus OCT brings together a stellar cast of authors who review the computer-aided diagnostic (CAD) systems developed to diagnose non-proliferative diabetic retinopathy in an automated fashion using Fundus and OCTA images. Academic researchers, bioengineers, new investigators and students interested in diabetes and retinopathy need an authoritative reference to bring this multidisciplinary field together to help reduce the amount of time spent on source-searching and instead focus on actual research and the clinical application. This reference depicts the current clinical understanding of diabetic retinopathy, along with the many scientific advances in understanding this condition. As the role of optical coherence tomography (OCT) in the assessment and management of diabetic retinopathy has become significant in understanding the vireo retinal relationships and the internal architecture of the retina, this information is more critical than ever. Includes unique information for academic clinicians, researchers and bioengineers Provides insights needed to understand the imaging modalities involved, the unmet clinical need that is being addressed, and the engineering and technical approaches applied Brings together details on the retinal vasculature in diabetics as imaged by optical coherence tomography angiography and automated detection of retinal disease

Asia will redraw the map of economic progress over the next twenty-five years. Growth is necessary to solve economic and social problems, but harder to achieve as the age of plenty gives way to the age of scarcities. The challenge opens the doors for an Asian economic model based on shifting of productivity for the individual to groups, ecological productivity instead of economic productivity, and a reversal to traditional Asian values - less materialistic than Western values. A new paradigm for economic thinking emerges to replace the one launched in the West 200 years ago.

This textbook introduces the "Fundamentals of Multimedia", addressing real issues commonly faced in the workplace. The essential concepts are explained in a practical way to enable students to apply their existing skills to address problems in multimedia. Fully revised and updated, this new edition now includes coverage of such topics as 3D TV, social networks, high-efficiency video compression and conferencing, wireless and mobile networks, and their attendant technologies. Features: presents an overview of the key concepts in multimedia, including color science; reviews lossless and lossy compression methods for image, video and audio data; examines the demands placed by multimedia communications on wired and wireless networks; discusses the impact of social media and cloud computing on information sharing and on multimedia content search and retrieval; includes study exercises at the end of each chapter; provides supplementary resources for both students and instructors at an associated website.

Describes the deblurring algorithms and techniques collectively known as spectral filtering methods, in which the singular value decomposition, or a similar decomposition with spectral properties, is used to introduce the necessary regularization or filtering in the reconstructed image. The concise MATLAB® implementations described in the book

provide a template of techniques that can be used to restore blurred images from many applications.

Negotiating Critical Literacies in Classroomsbrings together accounts of educators who have sought to make a difference in the lives of their students through literacy education--from university classrooms in the United States, England, and South Africa, to policy and curriculum development in Singapore and Australia. Each chapter represents the results of extended research on classroom practice. The authors in this collection write as teachers. The literacy classrooms they explore range from the early years of schooling, to primary and secondary education, through to community and university sites. Although the volume is organized around different levels of education, clearly overlapping themes emerge across the chapters, including identity formation and textual practices, politicizing curriculum and textbook production, and changing the power relations in classroom talk around text. An overarching theme of this collection is the belief that there is no one generic, universal critical literacy--in theory or in practice. Rather, the authors reveal how a range of theories can serve as productive starting points for educators working on social justice agendas through the literacy curriculum, and, equally important, how particular critical literacy theories or pedagogies must be worked out in specific locations. In each of these accounts, educators explain how they have taken a body of theory and worked with and on it in classrooms. Their rich portrayals and narratives of classroom realities illustrate the unanticipated effects of pedagogies that emerge in specific contexts. Experiences from the classrooms have led them to revise theories that are central to critical literacy, including constructs such as "empowerment," "resistance," and "multiple readings." This collection documents what occurs when educators confront the difficult ethical and political issues that evolve in particular classroom situations. Negotiating Critical Literacies in Classroomsis appropriate as a text for courses in language and literacy education, and will be of broad interest to educational researchers, practitioners, and theorists. The practical classroom focus makes this book accessible and of interest to a wide range of teachers and an excellent resource for professional development. The international scope will appeal to a global educational readership.

This book reports on the latest advances in the study of biomedical signal processing, and discusses in detail a number of open problems concerning clinical, biomedical and neural signals. It methodically collects and presents in a unified form the research findings previously scattered throughout various scientific journals and conference proceedings. In addition, the chapters are self-contained and can be read independently. Accordingly, the book will be of interest to university researchers, R&D engineers and graduate students who wish to learn the core principles of biomedical signal analysis, algorithms, and applications, while also offering a valuable reference work for biomedical engineers and clinicians who wish to learn more about the theory and recent applications of neural engineering and biomedical signal processing.

?As the janitor in a haunted house, single mom Abby Jenkins has many contacts with the living and the dead in the small Pacific Northwest town of Sunset Cove, which puts her in a perfect position to solve local mysteries. Or so she thinks. Hired to find diamonds hidden in a haunted manor she gets help from a Viking ghost with existential issues. Will she survive? This book contains bad-boy ghosts, mischievous magic, and a woman who knows what she wants in a Viking hayloft.

Definitive compact guide to rocks, minerals, crystals and gemstones - for every rockhound and budding gemmologist!From primeval origins to their astonishing modern-day uses and appeal, this is the ultimate portrait of Earth's buried treasures - rocks, minerals, crystals and gems - produced in association with the Smithsonian Institution. Learn how to identify more than 450 rock and mineral specimens through stunning photographs and detailed characteristics. Discover more about your finds through folklore and historical artefacts, and find out the fascinating stories behind the world's natural treasures; from the Hope diamond to the Great Mogul emerald.Plus, pick up practical advice on rock and mineral collecting, including how to cut, polish and display your finds.

Multimedia '99 covers technological and scientific areas of media production, processing and delivery. 24 contributions from research laboratories and universities worldwide give a broad perspective on multimedia research with a special focus on media convergence. The topics treated in this volume: image and sound content analysis and processing, paradigms and metaphors for multimedia authoring and display, applications such as education or entertainment, and multimedia content authentication and security.

This book presents a comprehensive overview of extant literature on competence-based vocational and professional education since the introduction of the competence concept in the 1950s. To structure the fi eld, the book distinguishes between three approaches to defi ning competence, based on 1.functional behaviourism, 2. integrated occupationalism, and 3. situated professionalism. It also distinguishes between two ways of operationalizing competence: 1. behaviour-oriented generic, and 2. task-oriented specifi c competence. Lastly, it identifi es three kinds of competencies, related to: 1. specific activities, 2. known jobs, and 3. the unknown future. Competence for the unknown future must receive more attention, as our world is rapidly evolving and there are many ‘glocal’ challenges which call for innovation and a profound transformation of policies and practices. Th e book presents a range of diff erent approaches to competence-based education, and demonstrates that competencebased education is a worldwide innovation, which is institutionalized in various ways. It presents the major theories and policies, specifi c components of educational systems, such as recognition, accreditation, modelling and assessment, and developments in discipline-oriented and transversal competence domains. Th e book concludes by synthesizing the diff erent perspectives with the intention to contribute to further improving vocational and professional education policy and practice. Joao Santos, Deputy Head of Unit C5, Vocational Training and Adult Education, Directorate General for Employment, Social Aff airs and Inclusion, European Commission: “This comprehensive work on competence-based education led by Martin Mulder, provides an excellent and timely contribution to the current debate on a New Skills Agenda for Europe, and the challenge of bridging the employment and education and training worlds closer together. Th is book will infl uence our work aimed at improving the relevance of vocational education to support initial and continuing vocational education and training policy and practice aimed at strengthening the key competencies for the 21st century.” Prof. Dr. Reinhold Weiss, Deputy President and Head of the Research, Federal Institute for Vocational Education and Training (BIBB), Bonn, Germany: “This book illustrates that the idea and concept of competence is not only a buzzword in educational debates but key to innovative pedagogical thinking as well as educational practice.” Prof. Dr. Johanna Lasonen, College of Education, University of South Florida, Tampa, USA: "Competence-based Vocational and Professional Education is one of the most important multi-disciplinary book in education and training. Th is path-breaking book off ers a timely, rich and global perspective on the fi eld. Th e book is a good resource for practitioners, policymakers and researchers."

Widely regarded as the cornerstone text in the field, the successful series of editions continues to follow the tradition of a clear and comprehensive presentation of the physical principles and operational aspects of medical imaging. The Essential Physics of Medical Imaging, 4th Edition, is a coherent and thorough compendium of the fundamental principles of the physics, radiation protection, and radiation

biology that underlie the practice and profession of medical imaging. Distinguished scientists and educators from the University of California, Davis, provide up-to-date, readable information on the production, characteristics, and interactions of non-ionizing and ionizing radiation, magnetic fields and ultrasound used in medical imaging and the imaging modalities in which they are used, including radiography, mammography, fluoroscopy, computed tomography, magnetic resonance, ultrasound, and nuclear medicine. This vibrant, full-color text is enhanced by more than 1,000 images, charts, and graphs, including hundreds of new illustrations. This text is a must-have resource for medical imaging professionals, radiology residents who are preparing for Core Exams, and teachers and students in medical physics and biomedical engineering.

From archiving data to CD-ROMs, and from coding theory to image analysis, many facets of computing make use of data compression in one form or another. This is an overview of the many different types of compression, including a taxonomy, an analysis of the most common systems of compression, discussion of their relative benefits and disadvantages, and their most common uses. Readers are presupposed to have a basic understanding of computer science -- essentially the storage of data in bytes and bits and computing terminology -- but otherwise this book is self-contained. It divides neatly into four main parts based on the main branches of data compression: run length encoding, statistical methods, dictionary-based methods, and lossy image compression. All of the most well-known compression techniques are covered including Zip, BinHex, Huffman coding, and GIF.

This book is the definitive text on the application of interferometric radar techniques to the solution of current geophysical problems, using examples and discoveries from the author's world-famous lab at Stanford University, JPL, NASA, and the Department of Defense. It describes the notation and coordinate systems used within the field, the importance of phase measurements, and provides a brief discussion of the parallel argument for point target scatterers. It also introduces the concept of correlation of radar signals from different antennas, fundamental to the performance of any interferometer.

“Riveting.” —The New York Times Book Review Hundreds of miles from civilization, two ships wreck on opposite ends of the same deserted island in this true story of human nature at its best—and at its worst. It is 1864, and Captain Thomas Musgrave’s schooner, the Grafton, has just wrecked on Auckland Island, a forbidding piece of land 285 miles south of New Zealand. Battered by year-round freezing rain and constant winds, it is one of the most inhospitable places on earth. To be shipwrecked there means almost certain death. Incredibly, at the same time on the opposite end of the island, another ship runs aground during a storm. Separated by only twenty miles and the island’s treacherous, impassable cliffs, the crews of the Grafton and the Invercauld face the same fate. And yet where the Invercauld’s crew turns inward on itself, fighting, starving, and even turning to cannibalism, Musgrave’s crew bands together to build a cabin and a forge—and eventually, to find a way to escape. Using the survivors’ journals and historical records, award-winning maritime historian Joan Druett brings to life this extraordinary untold story about leadership and the fine line between order and chaos.

Beberapa materi yang dibahas dalam buku ini adalah pengenalan pola yang berisi tentang tahap-tahap untuk mengenali pola sebuah data citra melalui proses klasifikasi. Ekstraksi ciri merupakan tahapan yang paling penting dalam pengenalan pola, karena itu diberikan bahasan tentang beberapa metode ekstraksi ciri secara khusus, kemudian dilanjutkan dengan pembahasan tentang algoritme klasifikasi sebagai alat untuk mengklasifikasi ciri dari sebuah data citra. Pembahasan berikutnya adalah perkembangan metode steganografi , dimulai dari teknik paling lama, yaitu metode LSB (Least Significant Bit), kemudian dikembangkan lagi menggunakan metode Pixel Value Differencing (PVD), Modulus Function (MF) dan metode Chinese Remainder Theorem (CRT). Watermark, pembahasannya dimulai dari domain spasial, domain frekuensi sampai dengan domain wavelet dan SVD (Singular Value Decomposition) agar pembaca mengetahui teknik-teknik watermark yang berkembang saat ini.

This book describes established and advanced methods for reducing the dimensionality of numerical databases. Each description starts from intuitive ideas, develops the necessary mathematical details, and ends by outlining the algorithmic implementation. The text provides a lucid summary of facts and concepts relating to well-known methods as well as recent developments in nonlinear dimensionality reduction. Methods are all described from a unifying point of view, which helps to highlight their respective strengths and shortcomings. The presentation will appeal to statisticians, computer scientists and data analysts, and other practitioners having a basic background in statistics or computational learning.

The past few decades have witnessed the explosive growth of Earth Sciences in the pursuit of knowledge and understanding the planet Earth. Such a development addresses the challenging endeavour to enrich human lives with bounding Nature as well as to preserve the Planet Earth, the Moon, the other planets, in total the Cosmos, for generations to come. Geodetic Sciences aspires to define and quantify the internal structure, the surface structure, the Oceans and the Atmosphere as well as the exterior - interior structure of the planets. Basic principles of Physics and Astronomy, namely the Static Gravity Field, the time-varying Gravity Field, in short Gravitodynamics, of the Earth and the other planets, the complex rotational motion for rigid bodies as well as deforming bodies of the Earth, The Moon, the Sun, and the planets and their moons and on top the time-varying Topography open a fascination Arena of Geodetic Sciences.

Diagnostic Ultrasound Imaging provides a unified description of the physical principles of ultrasound imaging, signal processing, systems and measurements. This comprehensive reference is a core resource for both graduate students and engineers in medical ultrasound research and design. With continuing rapid technological development of ultrasound in medical diagnosis, it is a critical subject for biomedical engineers, clinical and healthcare engineers and practitioners, medical physicists, and related professionals in the fields of signal and image processing. The book contains 17 new and updated chapters covering the fundamentals and latest advances in the area, and includes four appendices, 450 figures (60 available in color on the companion website), and almost 1,500 references. In addition to the continual influx of readers entering the field of ultrasound worldwide who need the broad grounding in the core technologies of ultrasound, this book provides those already working in these areas with clear and comprehensive expositions of these key new topics as well as introductions to state-of-the-art innovations in this field. Enables practicing engineers, students and clinical professionals to understand the essential physics and signal processing techniques behind modern imaging systems as well as introducing the latest developments that will shape medical ultrasound in the future Suitable for both newcomers and experienced readers, the practical, progressively organized applied approach is supported by hands-on

MATLAB® code and worked examples that enable readers to understand the principles underlying diagnostic and therapeutic ultrasound Covers the new important developments in the use of medical ultrasound: elastography and high-intensity therapeutic ultrasound. Many new developments are comprehensively reviewed and explained, including aberration correction, acoustic measurements, acoustic radiation force imaging, alternate imaging architectures, bioeffects: diagnostic to therapeutic, Fourier transform imaging, multimode imaging, plane wave compounding, research platforms, synthetic aperture, vector Doppler, transient shear wave elastography, ultrafast imaging and Doppler, functional ultrasound and viscoelastic models

UP-TO-DATE, TECHNICALLY ACCURATE COVERAGE OF ESSENTIAL TOPICS IN IMAGE AND VIDEO PROCESSING This is the first book to combine image and video processing with a practical MATLAB®-oriented approach in order to demonstrate the most important image and video techniques and algorithms. Utilizing minimal math, the contents are presented in a clear, objective manner, emphasizing and encouraging experimentation. The book has been organized into two parts. Part I: Image Processing begins with an overview of the field, then introduces the fundamental concepts, notation, and terminology associated with image representation and basic image processing operations. Next, it discusses MATLAB® and its Image Processing Toolbox with the start of a series of chapters with hands-on activities and step-by-step tutorials. These chapters cover image acquisition and digitization; arithmetic, logic, and geometric operations; point-based, histogram-based, and neighborhood-based image enhancement techniques; the Fourier Transform and relevant frequency-domain image filtering techniques; image restoration; mathematical morphology; edge detection techniques; image segmentation; image compression and coding; and feature extraction and representation. Part II: Video Processing presents the main concepts and terminology associated with analog video signals and systems, as well as digital video formats and standards. It then describes the technically involved problem of standards conversion, discusses motion estimation and compensation techniques, shows how video sequences can be filtered, and concludes with an example of a solution to object detection and tracking in video sequences using MATLAB®. Extra features of this book include: More than 30 MATLAB® tutorials, which consist of step-by-step guides toexploring image and video processing techniques using MATLAB® Chapters supported by figures, examples, illustrative problems, and exercises Useful websites and an extensive list of bibliographical references This accessible text is ideal for upper-level undergraduate and graduate students in digital image and video processing courses, as well as for engineers, researchers, software developers, practitioners, and anyone who wishes to learn about these increasingly popular topics on their own.

A comprehensive guide to distributed algorithms that emphasizes examples and exercises rather than mathematical argumentation. This book offers students and researchers a guide to distributed algorithms that emphasizes examples and exercises rather than the intricacies of mathematical models. It avoids mathematical argumentation, often a stumbling block for students, teaching algorithmic thought rather than proofs and logic. This approach allows the student to learn a large number of algorithms within a relatively short span of time. Algorithms are explained through brief, informal descriptions, illuminating examples, and practical exercises. The examples and exercises allow readers to understand algorithms intuitively and from different perspectives. Proof sketches, arguing the correctness of an algorithm or explaining the idea behind fundamental results, are also included. An appendix offers pseudocode descriptions of many algorithms. Distributed algorithms are performed by a collection of computers that send messages to each other or by multiple software threads that use the same shared memory. The algorithms presented in the book are for the most part “classics,” selected because they shed light on the algorithmic design of distributed systems or on key issues in distributed computing and concurrent programming. Distributed Algorithms can be used in courses for upper-level undergraduates or graduate students in computer science, or as a reference for researchers in the field.

An integrated, comprehensive survey of biomedical imaging modalities An important component of the recent expansion in bioengineering is the area of biomedical imaging. This book provides in-depth coverage of the field of biomedical imaging, with particular attention to an engineering viewpoint. Suitable as both a professional reference and as a text for a one-semester course for biomedical engineers or medical technology students, Introduction to Biomedical Imaging covers the fundamentals and applications of four primary medical imaging techniques: magnetic resonance imaging, ultrasound, nuclear medicine, and X-ray/computed tomography. Taking an accessible approach that includes any necessary mathematics and transform methods, this book provides rigorous discussions of: The physical principles, instrumental design, data acquisition strategies, image reconstruction techniques, and clinical applications of each modality Recent developments such as multi-slice spiral computed tomography, harmonic and sub-harmonic ultrasonic imaging, multi-slice PET scanning, and functional magnetic resonance imaging General image characteristics such as spatial resolution and signal-to-noise, common to all of the imaging modalities

This is the first non-technical book on spectroscopy written specifically for practical amateur astronomers. It includes all the science necessary for a qualitative understanding of stellar spectra, but avoids a mathematical treatment which would alienate many of its intended readers. Any amateur astronomer who carries out observational spectroscopy and who wants a non-technical account of the physical processes which determine the intensity and profile morphology of lines in stellar spectra will find this is the only book written specially for them. It is an ideal companion to existing books on observational amateur astronomical spectroscopy.

Bilateral filtering is one of the most popular image processing techniques. The bilateral filter is a nonlinear process that can blur an image while respecting strong edges. Its ability to decompose an image into different scales without causing haloes after modification has made it ubiquitous in computational photography applications such as tone mapping, style transfer, relighting, and denoising. Bilateral Filtering: Theory and Applications provides a graphical, intuitive introduction to bilateral filtering, a practical guide for efficient implementation, an overview of

its numerous applications, as well as mathematical analysis. This broad and detailed overview covers theoretical and practical issues that will be useful to researchers and software developers.

Geophysical Data Analysis: Discrete Inverse Theory is an introductory text focusing on discrete inverse theory that is concerned with parameters that either are truly discrete or can be adequately approximated as discrete. Organized into 12 chapters, the book’s opening chapters provide a general background of inverse problems and their corresponding solution, as well as some of the basic concepts from probability theory that are applied throughout the text. Chapters 3-7 discuss the solution of the canonical inverse problem, that is, the linear problem with Gaussian statistics, and discussions on problems that are non-Gaussian and nonlinear are covered in Chapters 8 and 9. Chapters 10-12 present examples of the use of inverse theory and a discussion on the numerical algorithms that must be employed to solve inverse problems on a computer. This book is of value to graduate students and many college seniors in the applied sciences.

Mathematics for Electrical Engineering and Computing embraces many applications of modern mathematics, such as Boolean Algebra and Sets and Functions, and also teaches both discrete and continuous systems - particularly vital for Digital Signal Processing (DSP). In addition, as most modern engineers are required to study software, material suitable for Software Engineering - set theory, predicate and prepositional calculus, language and graph theory - is fully integrated into the book. Excessive technical detail and language are avoided, recognising that the real requirement for practising engineers is the need to understand the applications of mathematics in everyday engineering contexts. Emphasis is given to an appreciation of the fundamental concepts behind the mathematics, for problem solving and undertaking critical analysis of results, whether using a calculator or a computer. The text is backed up by numerous exercises and worked examples throughout, firmly rooted in engineering practice, ensuring that all mathematical theory introduced is directly relevant to real-world engineering. The book includes introductions to advanced topics such as Fourier analysis, vector calculus and random processes, also making this a suitable introductory text for second year undergraduates of electrical, electronic and computer engineering, undertaking engineering mathematics courses. Dr Attenborough is a former Senior Lecturer in the School of Electrical, Electronic and Information Engineering at South Bank University. She is currently Technical Director of The Webbery - Internet development company, Co. Donegal, Ireland. Fundamental principles of mathematics introduced and applied in engineering practice, reinforced through over 300 examples directly relevant to real-world engineering

The main idea of this book is that to comprehend the instructional potential of simulation and to design effective simulation-based learning environments, one has to consider both what happens inside the computer and inside the students' minds. The framework adopted to do this is model-centered learning, in which simulation is seen as particularly effective when learning requires a restructuring of the individual mental models of the students, as in conceptual change. Mental models are by themeselves simulations, and thus simulation models can extend our biological capacity to carry out simulative reasoning. For this reason, recent approaches in cognitive science like embodied cognition and the extended mind hypothesis are also considered in the book.. A conceptual model called the “epistemic simulation cycle” is proposed as a blueprint for the comprehension of the cognitive activies involved in simulation-based learning and for instructional design.