Automated Blood Cancer Detection Using Image Processing

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Deep Learning Applications in Medical Imaging - Saxena, Sanjay 2020-10-16
Before the modern age of medicine, the chance of surviving a terminal disease such as cancer was minimal at best. After embracing the age of computer-aided medical analysis technologies, however, detecting and preventing individuals from contracting a variety of life-threatening diseases has led to a greater survival percentage and increased the development of algorithmic technologies in healthcare. Deep Learning Applications in

Medical Imaging is a pivotal reference source that provides vital research on the application of generating pictorial depictions of the interior of a body for medical intervention and clinical analysis. While highlighting topics such as artificial neural networks, disease prediction, and healthcare analysis, this publication explores image acquisition and pattern recognition as well as the methods of treatment and care. This book is ideally designed for diagnosticians, medical imaging specialists, healthcare professionals, physicians, medical researchers, academicians, and students.

Image Processing for Automated Diagnosis of Cardiac Diseases - Kalpana Chauhan 2021-07-13

Image Processing for Automated Diagnosis of Cardiac Diseases highlights current and emerging technologies for the automated diagnosis of cardiac diseases. It presents concepts and practical algorithms, including techniques for the automated diagnosis of organs in motion using image processing. This book is suitable for biomedical engineering researchers, engineers and scientists in research and development, and clinicians who want to learn more about and develop advanced concepts in image processing to overcome the challenges of automated diagnosis of heart disease. Includes advanced techniques to improve diagnostic methods for various cardiac diseases Uses methods to improve the

existing diagnostic features of echocardiographic machines Develops new diagnostic features for echocardiographic machines

Tracking and Preventing Diseases with Artificial Intelligence - Mayuri Mehta 2021

This book presents an overview of how machine learning and data mining techniques are used for tracking and preventing diseases. It covers several aspects such as stress level identification of a person from his/her speech, automatic diagnosis of disease from X-ray images, intelligent diagnosis of Glaucoma from clinical eye examination data, prediction of protein-coding genes from big genome data, disease detection through microscopic analysis of blood cells, information retrieval from electronic medical record using named entity recognition approaches, and prediction of drug-target interactions. The book is suitable for computer scientists having a bachelor degree in computer science. The book is an ideal resource as a reference book for teaching a graduate course on AI for Medicine or AI for Health care. Researchers working in the multidisciplinary areas use this book to discover the current developments. Besides its use in academia, this book provides enough details about the state-of-the-art algorithms addressing various biomedical domains, so that it could be used by industry practitioners who want to implement AI techniques to analyze the diseases. Medical institutions use this

book as reference material and give tutorials to medical experts on how the advanced AI and ML techniques contribute to the diagnosis and prediction of the diseases.

Handbook of Image and Video Processing - Alan Conrad Bovik 2000

The Handbook of Image and Video Processing contains a comprehensive and highly accessible presentation of all essential mathematics, techniques, and algorithms for every type of image and video processing used by scientists and engineers. The timely volume will provide both the novice and the seasoned practitioner with the necessary information and skills to be able to develop algorithms and applications for multimedia, digital imaging, digital video, telecommunications, and World Wide Web industries. Handbook of Image and Video Processing will also serve as a textbook for courses such as digital image processing, digital image analysis, digital video, video communications, multimedia, and biomedical image processing in the departments of electrical and computer engineering and computer science. * No other resource contains the same breadth of up-to-date coverage * Contains over 100 example algorithm illustrations * Contains a series of extremely accessible tutorial chapters * Indispensible for researchers in telecommunications, internet applications, multimedia, and nearly every branch of science

Hybrid Image Processing Methods for Medical

Image Examination - Venkatesan Rajinikanth 2021-01-29
In view of better results expected from examination of medical datasets (images) with hybrid (integration of thresholding and segmentation) image processing methods, this work focuses on implementation of possible hybrid image examination techniques for medical images. It describes various image thresholding and segmentation methods which are essential for the development of such a hybrid processing tool. Further, this book presents the essential details, such as test image preparation, implementation of a chosen thresholding operation, evaluation of threshold image, and implementation of segmentation procedure and its evaluation, supported by pertinent case studies. Aimed at researchers/graduate students in the medical image processing domain, image processing, and computer engineering, this book: Provides broad background on various image thresholding and segmentation techniques Discusses information on various assessment metrics and the confusion matrix Proposes integration of the thresholding technique with the bio-inspired algorithms Explores case studies including MRI, CT, dermoscopy, and ultrasound images Includes separate chapters on machine learning and deep learning for medical image processing

Mobile Devices and Smart Gadgets in Medical Sciences - Umair, Sajid 2020-02-21
Each day, new applications and methods

are developed for utilizing technology in the field of medical sciences, both as diagnostic tools and as methods for patients to access their medical information through their personal gadgets. However, the maximum potential for the application of new technologies within the medical field has not yet been realized. Mobile Devices and Smart Gadgets in Medical Sciences is a pivotal reference source that explores different mobile applications, tools, software, and smart gadgets and their applications within the field of healthcare. Covering a wide range of topics such as artificial intelligence, telemedicine, and oncology, this book is ideally designed for medical practitioners, mobile application developers, technology developers, software experts, computer engineers, programmers, ICT innovators, policymakers, researchers, academicians, and students.

Parallel Image-processing for Automated Cervical Smear Analysis - John S. Read 1972

Spatial Coherence for Visual Motion Analysis - W. James MacLean 2006-03-30

This book constitutes the thoroughly refereed post-proceedings of the First International Workshop on Spatial Coherence for Visual Motion Analysis, 2004, held in May 2004. The eleven revised full research papers presented went through two rounds of reviewing and improvement. The papers in this volume cover a wide range in the field of motion analysis that is a

central problem in computer vision. The workshop examined techniques for integrating spatial coherence constraints during motion analysis of image sequences.

2019 5th International Conference on Computing, Communication, Control and Automation (ICCUBEA) - IEEE Staff 2019-09-19

The proposed conference with an objective to provide opportunities to academicians, researchers and industry representatives nationally and globally to present their work in the identified areas The interactions among the presenters, juries and audience will help strengthen the technology innovation and to formulate solutions to the challenges of the society

2019 International Conference on Vision Towards Emerging Trends in Communication and Networking (ViTECoN) - IEEE Staff 2019-03-30

The International Conference on Vision Towards Emerging Trends in Communication and Networking (VITECON 2019) is the premier forum for the presentation of new advances and research results in the fields of Electronics and Communication Engineering The conference will bring together leading researchers, engineers and scientists in the domain of interest from around the world

Deep Learning in Medical Image Analysis - Gobert Lee 2020-02-06

This book presents cutting-edge research and applications of deep learning in a broad range of medical imaging scenarios, such as computer-aided diagnosis, image segmentation, tissue

recognition and classification, and other areas of medical and healthcare problems. Each of its chapters covers a topic in depth, ranging from medical image synthesis and techniques for muskuloskeletal analysis to diagnostic tools for breast lesions on digital mammograms and glaucoma on retinal fundus images. It also provides an overview of deep learning in medical image analysis and highlights issues and challenges encountered by researchers and clinicians, surveying and discussing practical approaches in general and in the context of specific problems. Academics, clinical and industry researchers, as well as young researchers and graduate students in medical imaging, computer-aided-diagnosis, biomedical engineering and computer vision will find this book a great reference and very useful learning resource.

An Introduction to Interpretation of Graphic Images - Sergey Ablameyko 1997

The image analysis community has put much effort into developing systems for the automatic reading of various types of documents containing text, graphic information, and pictures. A closely related but much more problematic task is the reading and interpretation of line drawings such as maps, engineering drawings, and diagrams. This book considers the problem in detail, analyzes its theoretical foundations, and analyzes existing approaches and systems.

Big Data in Multimodal Medical Imaging - Ayman El-Baz 2019-11-06

There is an urgent need

to develop and integrate new statistical, mathematical, visualization, and computational models with the ability to analyze Big Data in order to retrieve useful information to aid clinicians in accurately diagnosing and treating patients. The main focus of this book is to review and summarize state-of-the-art big data and deep learning approaches to analyze and integrate multiple data types for the creation of a decision matrix to aid clinicians in the early diagnosis and identification of high risk patients for human diseases and disorders. Leading researchers will contribute original research book chapters analyzing efforts to solve these important problems.

Remote Sensing, Models, and Methods for Image Processing - Robert A. Schowengerdt 1997

Remote sensing is the use of electromagnetic sensors to monitor the earth's surface and atmosphere. This technique can produce anything from topographic or geologic maps to two- or three-dimensional distributions of environmental parameters to the detection of developing hurricanes or floods. These sensors produce digitized data, so it is important that anyone working in remote sensing is familiar with the techniques used. This updated second edition discusses a unified framework and rationale for designing and evaluating image processing algorithms.

Proceedings of the Global AI Congress 2019 - Jyotsna Kumar Mandal 2020-04-02

This book gathers high-quality research papers

presented at the Global AI Congress 2019, which was organized by the Institute of Engineering and Management, Kolkata, India, on 12–14 September 2019. Sharing contributions prepared by researchers, practitioners, developers and experts in the areas of artificial intelligence, the book covers the areas of AI for E-commerce and web applications, AI and sensors, augmented reality, big data, brain computing interfaces, computer vision, cognitive radio networks, data mining, deep learning, expert systems, fuzzy sets and systems, image processing, knowledge representation, nature-inspired computing, quantum machine learning, reasoning, robotics and autonomous systems, robotics and the IoT, social network analysis, speech processing, video processing, and virtual reality.

Fog, Edge, and Pervasive Computing in Intelligent IoT Driven Applications - Deepak Gupta 2021-01-07

A practical guide to the design, implementation, evaluation, and deployment of emerging technologies for intelligent IoT applications With the rapid development in artificially intelligent and hybrid technologies, IoT, edge, fog-driven, and pervasive computing techniques are becoming important parts of our daily lives. This book focuses on recent advances, roles, and benefits of these technologies, describing the latest intelligent systems from a practical point of view. Fog, Edge, and Pervasive Computing in Intelligent IoT Driven Applications

is also valuable for engineers and professionals trying to solve practical, economic, or technical problems. With a uniquely practical approach spanning multiple fields of interest, contributors cover theory, applications, and design methodologies for intelligent systems. These technologies are rapidly transforming engineering, industry, and agriculture by enabling real-time processing of data via computational, resource-oriented metaheuristics and machine learning algorithms. As edge/fog computing and associated technologies are implemented far and wide, we are now able to solve previously intractable problems. With chapters contributed by experts in the field, this book: Describes Machine Learning frameworks and algorithms for edge, fog, and pervasive computing Considers probabilistic storage systems and proven optimization techniques for intelligent IoT Covers 5G edge network slicing and virtual network systems that utilize new networking capacity Explores resource provisioning and bandwidth allocation for edge, fog, and pervasive mobile applications Presents emerging applications of intelligent IoT, including smart farming, factory automation, marketing automation, medical diagnosis, and more Researchers, graduate students, and practitioners working in the intelligent systems domain will appreciate this book’s practical orientation and comprehensive coverage. Intelligent IoT is revolutionizing every

industry and field today, and Fog, Edge, and Pervasive Computing in Intelligent IoT Driven Applications provides the background, orientation, and inspiration needed to begin.

Medical Image Analysis and Informatics - Paulo Mazzoncini de Azevedo-Marques 2017-11-23

With the development of rapidly increasing medical imaging modalities and their applications, the need for computers and computing in image generation, processing, visualization, archival, transmission, modeling, and analysis has grown substantially. Computers are being integrated into almost every medical imaging system. Medical Image Analysis and Informatics demonstrates how quantitative analysis becomes possible by the application of computational procedures to medical images. Furthermore, it shows how quantitative and objective analysis facilitated by medical image informatics, CBIR, and CAD could lead to improved diagnosis by physicians. Whereas CAD has become a part of the clinical workflow in the detection of breast cancer with mammograms, it is not yet established in other applications. CBIR is an alternative and complementary approach for image retrieval based on measures derived from images, which could also facilitate CAD. This book shows how digital image processing techniques can assist in quantitative analysis of medical images, how pattern recognition and classification techniques can facilitate CAD, and how CAD systems can assist

in achieving efficient diagnosis, in designing optimal treatment protocols, in analyzing the effects of or response to treatment, and in clinical management of various conditions. The book affirms that medical imaging, medical image analysis, medical image informatics, CBIR, and CAD are proven as well as essential techniques for health care.

Nonlinear Image Processing - Sanjit Kumar Mitra 2001

This state-of-the-art book deals with the most important aspects of non-linear imaging challenges. The need for engineering and mathematical methods is essential for defining non-linear effects involved in such areas as computer vision, optical imaging, computer pattern recognition, and industrial automation challenges. * Presents the latest developments in a variety of filter design techniques and algorithms * Contains essential information for development of Human Vision Systems (HVS) * Provides foundations for digital imaging and image capture technology

Landmark-Based Image Analysis - Karl Rohr 2001-02-28

This is the first comprehensive treatment of the extraction of landmarks from multimodality images and the use of these features for elastic image registration. The emphasis is on model-based approaches, i.e. on the use of explicitly represented knowledge in computer vision. Both geometric models (describing the shape of objects) and intensity models (directly representing the image intensities) are utilized. The work

describes theoretical foundations, computational and algorithmic issues, as well as practical applications, notably in medicine (neurosurgery and radiology), remote sensing, and industrial automation. Connections with computer graphics and artificial intelligence are illustrated. Audience: This volume will be of interest to readers seeking an introduction and overview of landmark-based image analysis, and in particular to graduate students and researchers in computer science, engineering, computer vision, and medical image analysis.

Application of Deep Learning Methods in Healthcare and Medical Science - Rohit Tanwar 2023-01-12

The volume provides a wealth of up-to-date information on developments and applications of deep learning in healthcare and medicine, providing deep insight and understanding of novel applications that address the tough questions of disease diagnosis, prevention, and immunization. The volume looks at applications of deep learning for major medical challenges such as cancer detection and identification, birth asphyxia among neonates, kidney abnormalities, white blood cell segmentation, diabetic retinopathy detection, and Covid-19 diagnosis, prevention, and immunization. The volume discusses applications of deep learning in detection, diagnosis, intensive examination and evaluation, genomic sequencing, convolutional neural networks for image recognition and

processing, and more for health issues such as kidney problems, brain tumors, lung damage, and breast cancer. The authors look at ML for brain tumor segmentation, in lung CT scans, in digital X-ray devices, and for logistic and transport systems for effective delivery of healthcare.

Computer Imaging - Scott E Umbaugh 2005-01-27

Computer Imaging: Digital Image Analysis and Processing brings together analysis and processing in a unified framework, providing a valuable foundation for understanding both computer vision and image processing applications. Taking an engineering approach, the text integrates theory with a conceptual and application-oriented style, allowing you to immediately understand how each topic fits into the overall structure of practical application development. Divided into five major parts, the book begins by introducing the concepts and definitions necessary to understand computer imaging. The second part describes image analysis and provides the tools, concepts, and models required to analyze digital images and develop computer vision applications. Part III discusses application areas for the processing of images, emphasizing human visual perception. Part IV delivers the information required to apply a CVIPtools environment to algorithm development. The text concludes with appendices that provide supplemental imaging information and assist with the programming exercises found in each chapter. The author presents topics as needed for understanding

each practical imaging model being studied. This motivates the reader to master the topics and also makes the book useful as a reference. The CVIPtools software integrated throughout the book, now in a new Windows version, provides practical examples and encourages you to conduct additional exploration via tutorials and programming exercises provided with each chapter.

Automated Detection and Classification of Circulating Cancer Cells Via High-throughput Microscopy - Ramses Martinez Agustin 2007

Preliminary in vivo animal studies looked at what correlation exists between the number of CTCs and disease progression. Routine detection of CTCs would enable physicians to observe the efficacy of treatment and modulate therapy.

Image Processing - Tinku Acharya 2005-09-08

Image processing—from basics to advanced applications Learn how to master image processing and compression with this outstanding state-of-the-art reference. From fundamentals to sophisticated applications, Image Processing: Principles and Applications covers multiple topics and provides a fresh perspective on future directions and innovations in the field, including: Image transformation techniques, including wavelet transformation and developments Image enhancement and restoration, including noise modeling and filtering Segmentation schemes, and classification and recognition of objects

Texture and shape analysis techniques Fuzzy set theoretical approaches in image processing, neural networks, etc. Content-based image retrieval and image mining Biomedical image analysis and interpretation, including biometric algorithms such as face recognition and signature verification Remotely sensed images and their applications Principles and applications of dynamic scene analysis and moving object detection and tracking Fundamentals of image compression, including the JPEG standard and the new JPEG2000 standard Additional features include problems and solutions with each chapter to help you apply the theory and techniques, as well as bibliographies for researching specialized topics. With its extensive use of examples and illustrative figures, this is a superior title for students and practitioners in computer science, wireless and multimedia communications, and engineering.

Techno-Societal 2020 - Prashant M. Pawar 2021-05-19

This book, divided in two volumes, originates from Techno-Societal 2020: the 3rd International Conference on Advanced Technologies for Societal Applications, Maharashtra, India, that brings together faculty members of various engineering colleges to solve Indian regional relevant problems under the guidance of eminent researchers from various reputed organizations. The focus of this volume is on technologies that

help develop and improve society, in particular on issues such as sensor and ICT based technologies for the betterment of people, Technologies for agriculture and healthcare, micro and nano technological applications. This conference aims to help innovators to share their best practices or products developed to solve specific local problems which in turn may help the other researchers to take inspiration to solve problems in their region. On the other hand, technologies proposed by expert researchers may find applications in different regions. This offers a multidisciplinary platform for researchers from a broad range of disciplines of Science, Engineering and Technology for reporting innovations at different levels.

Emerging Research in Computing, Information, Communication and Applications - N. R. Shetty 2021-11-15

This book presents the proceedings of International Conference on Emerging Research in Computing, Information, Communication and Applications, ERCICA 2020. The conference provides an interdisciplinary forum for researchers, professional engineers and scientists, educators and technologists to discuss, debate and promote research and technology in the upcoming areas of computing, information, communication and their applications. The book discusses these emerging research areas, providing a valuable resource for researchers and practicing engineers

alike.

Computational Intelligence And Image Processing In Medical Applications - Chi Hau Chen 2022-05-30

In recent years, there have been significant progress in computational intelligence and image processing with machine learning and deep learning as important components of modern artificial intelligence. All these progresses face challenges in dealing with Covid-19 pandemic for detection and treatment.This comprehensive compendium provides not only updated advances of computational intelligence and image processing in the detection and treatment of Covid-19, but also other medical applications such as in cancer detection and cardiovascular diseases, etc. More traditional approaches such as 2D segmentation and 3D reconstruction are included.The useful reference text is an updated version of the edited title, Computer Vision in Medical Imaging (World Scientific, 2014) and its companion volume, Frontiers of Medical Imaging (World Scientific, 2015). The book is written for engineers, scientists and the medical community to meet the increased challenges in medical applications.

Qualitative Motion Understanding - Wilhelm Burger 1992-06-30

Mobile robots operating in real-world, outdoor scenarios depend on dynamic scene understanding for detecting and avoiding obstacles, recognizing landmarks, acquiring models, and for detecting and tracking moving objects. Motion

understanding has been an active research effort for more than a decade, searching for solutions to some of these problems; however, it still remains one of the more difficult and challenging areas of computer vision research. Qualitative Motion Understanding describes a qualitative approach to dynamic scene and motion analysis, called DRIVE (Dynamic Reasoning from Integrated Visual Evidence). The DRIVE system addresses the problems of (a) estimating the robot's egomotion, (b) reconstructing the observed 3-D scene structure; and (c) evaluating the motion of individual objects from a sequence of monocular images. The approach is based on the FOE (focus of expansion) concept, but it takes a somewhat unconventional route. The DRIVE system uses a qualitative scene model and a fuzzy focus of expansion to estimate robot motion from visual cues, to detect and track moving objects, and to construct and maintain a global dynamic reference model.

Machine Learning in Medicine - Ayman El-Baz 2021-08-04

Machine Learning in Medicine covers the state-of-the-art techniques of machine learning and their applications in the medical field. It presents several computer-aided diagnosis (CAD) systems, which have played an important role in the diagnosis of several diseases in the past decade, e.g., cancer detection, resulting in the development of several successful systems. New developments in machine learning may make it possible in the near

future to develop machines that are capable of completely performing tasks that currently cannot be completed without human aid, especially in the medical field. This book covers such machines, including convolutional neural networks (CNNs) with different activation functions for small- to medium-size biomedical datasets, detection of abnormal activities stemming from cognitive decline, thermal dose modelling for thermal ablative cancer treatments, dermatological machine learning clinical decision support systems, artificial intelligence-powered ultrasound for diagnosis, practical challenges with possible solutions for machine learning in medical imaging, epilepsy diagnosis from structural MRI, Alzheimer's disease diagnosis, classification of left ventricular hypertrophy, and intelligent medical language understanding. This book will help to advance scientific research within the broad field of machine learning in the medical field. It focuses on major trends and challenges in this area and presents work aimed at identifying new techniques and their use in biomedical analysis, including extensive references at the end of each chapter.

Computer Vision and Image Processing - Balasubramanian Raman 2022-07-23

This two-volume set (CCIS 1567-1568) constitutes the refereed proceedings of the 6h International Conference on Computer Vision and Image Processing, CVIP 2021, held in Rupnagar, India, in December 2021.

The 70 full papers and 20 short papers were carefully reviewed and selected from the 260 submissions. The papers present recent research on such topics as biometrics, forensics, content protection, image enhancement/super-resolution/restoration, motion and tracking, image or video retrieval, image, image/video processing for autonomous vehicles, video scene understanding, human-computer interaction, document image analysis, face, iris, emotion, sign language and gesture recognition, 3D image/video processing, action and event detection/recognition, medical image and video analysis, vision-based human GAIT analysis, remote sensing, and more.

Digital Processing of Biomedical Images - K. Preston 2012-12-06

Until recently digital processing of biomedical images was conducted solely in the research laboratories of the universities and industry. However, with the advent of computerized tomography in 1972 and the computerized white blood cell differential count in 1974, enormous changes have suddenly occurred. Digital image pro cessing in biomedicine has now become the most active sector in the digital image processing field. Processing rates have reached the level of one trillion picture elements per year in the United States alone and are expected to be ten trillion per year in 1980. This enormous volume of activity has stimulated further re search in biomedical image processing in the last two years with the result that important

inroads have been made in applications in radiology, oncology, and ophthalmology. Although much significant work in this field is taking place in Europe, it is in the United States and Japan that the level of activity is highest.

Artificial Intelligence for Innovative Healthcare Informatics - Shabir Ahmad Parah 2022-05-23

There are several popular books published in Healthcare Computational Informatics like Computational Bioengineering and Bioinformatics (2020), Springer; Health Informatics (2017), Springer; Health Informatics Vision: From Data via Information to Knowledge (2019), IOS Press; Data Analytics in Biomedical Engineering and Healthcare (2020), Elsevier. However, in all these mentioned books, the challenges in Biomedical Imaging are solved in one dimension by use of any specific technology like Image Processing, Machine Learning or Computer Aided Systems. In this book, the book it has been attempted to bring all technologies related to computational analytics together and apply them on Biomedical Imaging.

Medical Imaging - K.C. Santosh 2019-08-20

The book discusses varied topics pertaining to advanced or up-to-date techniques in medical imaging using artificial intelligence (AI), image recognition (IR) and machine learning (ML) algorithms/techniques. Further, coverage includes analysis of chest radiographs (chest x-rays) via stacked generalization models, TB type detection using slice separation

approach, brain tumor image segmentation via deep learning, mammogram mass separation, epileptic seizures, breast ultrasound images, knee joint x-ray images, bone fracture detection and labeling, and diabetic retinopathy. It also reviews 3D imaging in biomedical applications and pathological medical imaging.

ISBI 2019 C-NMC Challenge: Classification in Cancer Cell Imaging - Anubha Gupta 2019-11-28

This book comprises select peer-reviewed proceedings of the medical challenge - C-NMC challenge: Classification of normal versus malignant cells in B-ALL white blood cancer microscopic images. The challenge was run as part of the IEEE International Symposium on Biomedical Imaging (IEEE ISBI) 2019 held at Venice, Italy in April 2019. Cell classification via image processing has recently gained interest from the point of view of building computer-assisted diagnostic tools for blood disorders such as leukaemia. In order to arrive at a conclusive decision on disease diagnosis and degree of progression, it is very important to identify malignant cells with high accuracy. Computer-assisted tools can be very helpful in automating the process of cell segmentation and identification because morphologically both cell types appear similar. This particular challenge was run on a curated data set of more than 14000 cell images of very high quality. More than 200 international teams participated in the challenge. This book

covers various solutions using machine learning and deep learning approaches. The book will prove useful for academics, researchers, and professionals interested in building low-cost automated diagnostic tools for cancer diagnosis and treatment.

Progress in Medical Imaging - Vernon L. Newhouse 2012-12-06

Progress in Medical Imaging contains a collection of interdisciplinary reviews of subtopics in medical imaging written by internationally known experts. Topics contained in the book include automatic recognition of cells and tissue types in light microscopy, computerized manipulation and assembly of two-dimensional scans of an organ into images of the three-dimensional organ which can be rotated in space, techniques for reducing the image degradation produced by scattering radiation in chest radiography, recent advances in instrumentation, and principles of positron-emission tomography. The final chapters of this book describe the advantages of pseudo-random codes as transmitted signals for ultrasonic flow measurement, imaging, and medium characterization. The primary audience for Progress in Medical Imaging includes engineers, physicists, and students engaged in research, development, or applications of medical imaging.

Fourier Vision - David Vernon 2001-06-30

Fourier Vision provides a new treatment of figure-ground segmentation in scenes comprising transparent, translucent, or opaque

objects. Exploiting the relative motion between figure and ground, this technique deals explicitly with the separation of additive signals and makes no assumptions about the spatial or spectral content of the images, with segmentation being carried out phasor by phasor in the Fourier domain. It works with several camera configurations, such as camera motion and short-baseline binocular stereo, and performs best on images with small velocities/displacements , typically one to ten pixels per frame. The book also addresses the use of Fourier techniques to estimate stereo disparity and optical flow. Numerous examples are provided throughout. Fourier Vision will be of value to researchers in image processing & computer vision and, especially, to those who have to deal with superimposed transparent or translucent objects. Researchers in application areas such as medical imaging and acoustic signal processing will also find this of interest.

Current Applications of Deep Learning in Cancer Diagnostics - Jyotismita Chaki 2023-02-22

This book examines deep learning-based approaches in the field of cancer diagnostics, as well as pre-processing techniques, which are essential to cancer diagnostics. Topics include introduction to current applications of deep learning in cancer diagnostics, pre-processing of cancer data using deep learning, review of deep learning techniques in oncology, overview of advanced deep learning

techniques in cancer diagnostics, prediction of cancer susceptibility using deep learning techniques, prediction of cancer reoccurrence using deep learning techniques, deep learning techniques to predict the grading of human cancer, different human cancer detection using deep learning techniques, prediction of cancer survival using deep learning techniques, complexity in the use of deep learning in cancer diagnostics, and challenges and future scopes of deep learning techniques in oncology.

Medical Imaging and Health Informatics - Tushar H. Jaware 2022-05-26

MEDICAL IMAGING AND HEALTH INFORMATICS Provides a comprehensive review of artificial intelligence (AI) in medical imaging as well as practical recommendations for the usage of machine learning (ML) and deep learning (DL) techniques for clinical applications. Medical imaging and health informatics is a subfield of science and engineering which applies informatics to medicine and includes the study of design, development, and application of computational innovations to improve healthcare. The health domain has a wide range of challenges that can be addressed using computational approaches; therefore, the use of AI and associated technologies is becoming more common in society and healthcare. Currently, deep learning algorithms are a promising option for automated disease detection with high accuracy. Clinical data analysis employing these

deep learning algorithms allows physicians to detect diseases earlier and treat patients more efficiently. Since these technologies have the potential to transform many aspects of patient care, disease detection, disease progression and pharmaceutical organization, approaches such as deep learning algorithms, convolutional neural networks, and image processing techniques are explored in this book. This book also delves into a wide range of image segmentation, classification, registration, computer-aided analysis applications, methodologies, algorithms, platforms, and tools; and gives a holistic approach to the application of AI in healthcare through case studies and innovative applications. It also shows how image processing, machine learning and deep learning techniques can be applied for medical diagnostics in several specific health scenarios such as COVID-19, lung cancer, cardiovascular diseases, breast cancer, liver tumor, bone fractures, etc. Also highlighted are the significant issues and concerns regarding the use of AI in healthcare together with other allied areas, such as the Internet of Things (IoT) and medical informatics, to construct a global multidisciplinary forum. Audience The core audience comprises researchers and industry engineers, scientists, radiologists, healthcare professionals, data scientists who work in health informatics, computer vision and medical image analysis.

Biomedical Image Analysis and Machine

Learning Technologies: Applications and Techniques - Gonzalez, Fabio A. 2009-12-31
Medical images are at the base of many routine clinical decisions and their influence continues to increase in many fields of medicine. Since the last decade, computers have become an invaluable tool for supporting medical image acquisition, processing, organization and analysis. Biomedical Image Analysis and Machine Learning Technologies: Applications and Techniques provides a panorama of the current boundary between biomedical complexity coming from the medical image context and the multiple techniques which have been used for solving many of these problems. This innovative publication serves as a leading industry reference as well as a source of creative ideas for applications of medical issues.

Algorithms for Image Processing and Computer Vision - J. R. Parker 1997
A cookbook of the hottest new algorithms and cutting-edge techniques in image processing and computer vision This amazing book/CD package puts the power of all the hottest new image processing techniques and algorithms in your hands. Based on J. R. Parker's exhaustive survey of Internet newsgroups worldwide, Algorithms for Image Processing and Computer Vision answers the most frequently asked questions with practical solutions. Parker uses dozens of real-life examples taken from fields such as robotics, space exploration, forensic analysis,

cartography, and medical diagnostics, to clearly describe the latest techniques for morphing, advanced edge detection, wavelets, texture classification, image restoration, symbol recognition, and genetic algorithms, to name just a few. And, best of all, he implements each method covered in C and provides all the source code on the CD. For the first time, you're rescued from the hours of mind-numbing mathematical calculations it would ordinarily take to program these state-of-the-art image processing capabilities into software. At last, nonmathematicians get all the shortcuts they need for sophisticated image recognition and processing applications. On the CD-ROM you'll find: * Complete code for examples in the book * A gallery of images illustrating the results of advanced techniques * A free GNU compiler that lets you run source code on any platform * A system for restoring damaged or blurred images * A genetic algorithms package

Global Trends in Information Systems and Software Applications - P. Venkata Krishna 2012-08-01

This 2-Volume-Set, CCIS 0269-CCIS 0270, constitutes the refereed proceedings of the International Conference on Global Trends in Computing and Communication (CCIS 0269) and the International Conference on Global Trends in Information Systems and Software Applications (CCIS 0270), ObCom 2011, held in Vellore, India, in December 2011. The 173 full papers presented together with a keynote paper and invited papers were

carefully reviewed and selected from 842 submissions. The conference addresses issues associated with computing, communication and information. Its aim is to increase exponentially the participants' awareness of the current and future direction in the domains and to create a platform between researchers, leading industry developers and end users to interrelate.