A Contour Based Mass Segmentation In Mammograms

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A Contour Based Mass Segmentation In Mammograms ***2023-02-27***

MURRAY PEARSON

Computer Vision - ECCV 2008 IGI Global
Fractal analysis is useful in digital image processing for the characterization of shape roughness and gray-scale texture or complexity. Breast masses present shape and gray-scale characteristics in mammograms that vary between benign masses and malignant tumors. This book demonstrates the use of fractal analysis to classify breast masses as benign masses or malignant tumors based on the irregularity exhibited in their contours and the gray-scale variability exhibited in their mammographic images. A few different approaches are described to estimate the fractal dimension (FD) of the contour of a mass, including the ruler method, box-counting method, and the power spectral analysis (PSA) method. Procedures are also described for the estimation of the FD of the gray-scale image of a mass using the blanket method and the PSA method. To facilitate comparative analysis of FD as a feature for pattern classification of breast masses, several other shape features and texture measures are described in the book. The shape features described include compactness, spiculation index, fractional concavity, and Fourier factor. The texture measures described are statistical measures derived from the gray-level cooccurrence matrix of the given image. Texture measures reveal properties about the spatial distribution of the gray levels in the given image; therefore, the performance of texture measures may be dependent on the resolution of the image. For this reason, an analysis of the effect of spatial resolution or pixel size on texture measures in the classification of breast masses is presented in the book. The results demonstrated in the book indicate that fractal analysis is more suitable for characterization of the shape than the gray-level variations of breast masses, with area under the receiver operating characteristics of up to 0.93 with a dataset of 111 mammographic images of masses. The methods and results presented in the book are useful for computer-aided diagnosis of breast cancer. Table of Contents: Computer-Aided Diagnosis of Breast Cancer / Detection and Analysis of\newline Breast Masses / Datasets of Images of Breast Masses / Methods for Fractal Analysis / Pattern Classification / Results of Classification of Breast Masses / Concluding Remarks
Artificial Intelligence Applications and Innovations CRC Press
This book constitutes the refereed proceedings of the 5th International Conference on Convergence and Hybrid Information Technology, ICHIT 2011, held in Daejeon, Korea, in September 2011. The 85 revised full papers presented were carefully reviewed and selected from 144 submissions. The papers are organized in topical sections on communications and networking; motion, video, image processing; security systems; cloud, RFID and robotics; industrial application of software systems; hardware and software engineering; healthcare, EEG and e-learning; HCI and data mining; software system and its applications.
Healthcare and Knowledge Management for Society 5.0 Springer Science & Business Media
Information retrieval (IR) is considered to be the science of searching for information from a variety of information sources related to texts, images, sounds, or multimedia. With the rise of the internet and digital databases, updated information retrieval methodologies are essential to ensure the continued facilitation and enhancement of information exchange. Critical Approaches to Information Retrieval Research is a critical scholarly publication that provides multidisciplinary examinations of theoretical innovations and methods in information retrieval technologies including search and storage applications for data, text, image, sound, document, and video retrieval. Featuring a wide range of topics including data mining, machine learning, and ontology, this book is ideal for librarians, software engineers, data scientists, professionals, researchers, information engineers, scientists, practitioners, and academicians working in the fields of computer science, information technology, information and communication sciences, education, health, library, and more.
Image Analysis and Processing – ICIAP 2019 Springer
The two-volume set LNAI 13612 and 13613 constitutes the proceedings of the 21st Mexican International Conference on Artificial Intelligence, MICAI 2022, held in Monterrey, Mexico, in October 2022. The total of 63 papers presented in these two volumes was carefully reviewed and selected from 137 submissions. The first volume, Advances in Computational Intelligence, contains 34 papers structured into three sections: Machine and Deep Learning Image Processing and Pattern Recognition Evolutionary and Metaheuristic Algorithms The second volume contains 29 papers structured into two sections: Natural Language Processing Intelligent Applications and Robotics
Handbook of X-ray Imaging Springer
Containing chapter contributions from over 130 experts, this unique publication is the first handbook dedicated to the physics and technology of X-ray imaging, offering extensive coverage of the field. This highly comprehensive work is edited by one of the world’s leading experts in X-ray imaging physics and technology and has been created with guidance from a Scientific Board containing respected and renowned scientists from around the world. The book's scope includes 2D and 3D X-ray imaging techniques from soft-X-ray to megavoltage energies, including computed tomography, fluoroscopy, dental imaging and small animal imaging, with several chapters dedicated to breast imaging techniques. 2D and 3D industrial imaging is incorporated, including imaging of artworks. Specific attention is dedicated to techniques of phase contrast X-ray imaging. The approach undertaken is one that illustrates the theory as well as the techniques and the devices routinely used in the various fields. Computational aspects are fully covered, including 3D reconstruction algorithms, hard/software phantoms, and computer-aided diagnosis. Theories of image quality are fully illustrated. Historical, radioprotection, radiation dosimetry, quality assurance and educational aspects are also covered. This handbook will be suitable for a very broad audience, including graduate students in medical physics and biomedical engineering; medical physics residents; radiographers; physicists and engineers in the field of imaging and non-destructive industrial testing using X-rays; and scientists interested in understanding and using X-ray imaging techniques. The handbook's editor, Dr. Paolo Russo, has over 30 years’ experience in the academic teaching of medical physics and X-ray imaging research. He has authored several book chapters in the field of X-ray imaging, is Editor-in-Chief of an international scientific journal in medical physics, and has responsibilities in the publication committees of international scientific organizations in medical physics. Features: Comprehensive coverage of the use of X-rays both in medical radiology and industrial testing The first handbook published to be dedicated to the physics and technology of X-rays Handbook edited by world authority, with contributions from experts in each field
Recent Advances in Mathematics, Statistics and Computer Science Springer Nature
It was an honor and a pleasure to organizethe 13th International Conference on Computer Analysis of Images and Patterns (CAIP 2009) in Mu¨nster, Germany. CAIP has been held biennially since 1985: Berlin (1985), Wismar (1987), Leipzig (1989), Dresden (1991), Budapest (1993), Prague (1995), Kiel (1997), Ljubljana (1999), Warsaw (2001), Groningen (2003), Paris (2005), and Vienna (2007). Initially, this conference series served as a forum for getting together s-entistsfromEastandWestEurope.Nowadays,CAIPenjoysahighinternational visibility and attracts participants from all over the world. For CAIP 2009 we received a record number of 405 submissions. All papers were reviewed by two, and in most cases, three reviewers. Finally, 148 papers were selected for presentation at the conference, resulting in an acceptance rate of 36%. All Program Committee members and additional reviewers listed here deserve a great thanks for their timely and competent reviews. The accepted papers were presented either as oral presentations or posters in a single-track program.In addition, wewereveryhappyto haveAljoscha Smolicand David G. Storkasourinvitedspeakerstopresenttheirworkintwofascinatingareas.With this scienti?c program we hope to continue the tradition of CAIP in providing a forum for scienti?c exchange at a high quality level. A successful conference like CAIP 2009 would not be possible without the support of many institutions and people. First of all, we like to thank all the authors of submitted papers and the invited speakers for their contributions. The Steering Committee members were always there when advice was needed.
Advances in Computational Intelligence Springer
The three-volume set LNCS 9900, 9901, and 9902 constitutes the refereed proceedings of the 19th International Conference on Medical Image Computing and Computer-Assisted Intervention, MICCAI 2016, held in Athens, Greece, in October 2016. Based on rigorous peer reviews, the program committee carefully selected 228 revised regular papers from 756 submissions for presentation in three volumes. The papers have been organized in the following topical sections: Part I: brain analysis, brain analysis - connectivity; brain analysis - cortical morphology; Alzheimer disease; surgical guidance and tracking; computer aided interventions; ultrasound image analysis; cancer image analysis; Part II: machine learning and feature selection; deep learning in medical imaging; applications of machine learning; segmentation; cell image analysis; Part III: registration and deformation estimation; shape modeling; cardiac and vascular image analysis; image reconstruction; and MR image analysis.
Emerging Trends in Image Processing, Computer Vision and Pattern Recognition CRC Press
This book constitutes the thoroughly refereed post-conference proceedings of the 7th International Conference on Intelligent Computing, ICIC 2011, held in Zhengzhou, China, in August 2011. The 94 revised full papers presented were carefully reviewed and selected from 832 submissions. The papers are organized in topical sections on intelligent computing in scheduling; local feature descriptors for image processing and recognition; combinatorial and numerical optimization; machine learning theory and methods; intelligent control and automation; knowledge representation/reasoning and expert systems; intelligent computing in pattern recognition; intelligent computing in image processing; intelligent computing in computer vision; biometrics with applications to individual security/forensic sciences; modeling, theory, and applications of positive systems; sparse manifold learning methods and applications; advances in intelligent information processing.
Advanced Intelligent Computing Theories and Applications CRC Press
Recent advancements and innovations in medical image and data processing have led to a need for robust and secure mechanisms to transfer images and signals over the internet and maintain copyright protection. The Handbook of Research on Information Security in Biomedical Signal Processing provides emerging research on security in biomedical data as well as techniques for accurate reading and further processing. While highlighting topics such as image processing, secure access, and watermarking, this publication explores advanced models and algorithms in information security in the modern healthcare system. This publication is a vital resource for academicians, medical professionals, technology developers, researchers, students, and practitioners seeking current research on intelligent techniques in medical data security.
Proceedings of International Conference on Communication and Computational Technologies Springer Science & Business Media
This book covers the state-of-the-art approaches for automated non-invasive systems for early cardiovascular disease diagnosis. It includes several prominent imaging modalities such as MRI, CT, and PET technologies. There is a special emphasis placed on automated imaging analysis techniques, which are important to biomedical imaging analysis of the cardiovascular system. Novel 4D based approach is a unique characteristic of this product. This is a comprehensive multi-contributed reference work that will detail the latest developments in spatial, temporal, and functional cardiac imaging. The main aim of this book is to help advance scientific research within the broad field of early detection of cardiovascular disease. This book focuses on major trends and challenges in this area, and it presents work aimed to identify new techniques and their use in biomedical image analysis. Key Features: Includes state-of-the art 4D cardiac image analysis Explores the aspect of automated segmentation of cardiac CT and MR images utilizing both 3D and 4D techniques Provides a novel procedure for improving full-cardiac strain estimation in 3D image appearance characteristics Includes extensive references at the end of each chapter to enhance further study
Intelligent Systems and Machine Learning National Library of Canada = Bibliothèque nationale du Canada
This book constitutes the refereed proceedings of the 8th International Conference on Intelligent Computing, ICIC 2012, held in Huangshan, China, in July 2012. The 85 revised full papers presented were carefully reviewed and selected from 753 submissions. The papers are organized in topical sections on neural networks, evolutionar learning and genetic algorithms, granular computing and rough sets, biology inspired computing and optimization, nature inspired computing and optimization, cognitive science and computational neuroscience, knowledge discovery and data mining, quantum computing, machine learning theory and methods, healthcare informatics theory and methods, biomedical informatics theory and methods, complex systems theory and methods, intelligent computing in signal processing, intelligent computing in image processing, intelligent computing in robotics, intelligent computing in computer vision, intelligent agent and web applications, special session on advances in information security 2012.
Medical Biometrics Elsevier Health Sciences
This book contains the proceedings of the Sixth International Workshop on Digital Mammography held in Bremen, Germany, June 22-25, 2002. The Workshop was a forum for discussing new developments in digital mammography and its applications and

included presentations by 135 experts from all over the world. It covers the latest developments in: Imaging Systems and Detectors, Image Quality, Image Processing and Display, Computer Aided Diagnosis, Soft Copy Reading, Clinical Studies of Digital Mammography or Related Modalities, 3D Techniques, Other Applications of Digital Mammography.

Health Monitoring and Personalized Feedback using Multimedia Data Springer Science & Business Media

This unique volume presents the scientific achievements, significant discoveries and pioneering contributions of various academicians, industrialist and research scholars. The book is an essential source of reference and provides a comprehensive overview of the author's work in the field of mathematics, statistics and computer science. Contents:Databased Intrinsic Weights of Indicators of Multi-Indicator Systems and Performance Measures of Multivariate Rankings of Systemic Objects (G P Patil & S W Joshi)Statistical Aspects of SuDoKu-Based Experimental Designs (Jyotirmoy Sarkar & Bikas K Sinha)Multi Criteria Decision Making Model for Optimal Selection of Recovery Facility Location and Collection Routes for a Sustainable Reverse Logistics Network under Fuzzy Environment (J D Darbari, V Agarwal & P C Jha)Optimal allocation of SKU and Safety Stock in Supply Chain System Network (K Gandhi, K Goyal, A Jha & J D Darbari)Bi-Objective Optimization Model for Fault-Tolerant Embedded Systems Under Build-Or-Buy Strategy Incorporating Recovery Block Scheme (R Kaur, S Arora, P C Jha & S Madan)Study of a Problem of Annular Cylinder Under Two-Temperature Thermoelasticity with Thermal Relaxation Parameters (Santwana Mukhopadhyay & Roushan Kumar)Multi-Criteria Advertisement Allocation Model of Multiple Advertisers on a Television Network (G Kaur, S Aggarwal & P C Jha)Computation of Maximum Likelihood Estimates in Three Parameter Weibull for Censored Data (Sanjeeva Kumar Jha)On Statistical Quality Control Techniques Based on Ranked Set Sampling (Md Sarwar Alamand, Arun Kumar Sinha & Rahbar Ali)Approximate Solution for Nonlinear Oscillator with Cubic and Quintic Nonlinearities (Jitendra Singh)Fuzzy DEA Cross-Efficiency Model for Ranking and Performance Evaluation Using Ideal and Anti-Ideal Decision Making Units (Seema Gupta, K N Rajeshwari & P C Jha)Poverty Analysis Using Scan Statistic Methods (Arun Kumar Sinha & Mukesh Kumar)Joint Performance Evaluation Data Envelopment Analysis Problem: An Interactive Approach (Riju Chaudhary, Pankaj Kumar Garg & P C Jha)Stochastic Modeling of a Repairable System Under Different Weather Conditions (S C Malik)Estimation of Risk Surfaces and Identification of District Boundaries for Tuberculosis in North-Eastern Indian States (Sanjeeva Kumar Jha & Ningthoukhongjam Vikimchandra Singh)Optimal Advertisement Allocation for Product Promotion on Television Channels (A Kaul, S Aggarwal, P C Jha & A Gupta)Fitting Linear Regressions: Development and Scope (Pranesh Kumar & J N Singh)The Impact of Family Planning on Fertility in Jharkhand State (Dilip Kumar)Spatial Analysis of AFP Surveillance Strategy for Polio Eradication in India (Pankaj Srivastava & Arun Kumar Sinha)On the Stochastic Modeling and Analysis of Bloom Caster System of Continuous Casting Shop Area of an Integrated Steel Plant (S K Singh)A Generalized Exponential-Lindley Distribution (A Mishra & Binod Kumar Sah)On Estimating the Urban Populations Using Minimum Information (Arun Kumar Sinha, Vijay Kumar & Ravi B P Verma)Fitting of Some Statistical Distributions of Daily Precipitation Data on North West India (NWI) Regions (Ranjan Kumar Sahoo)On Systematic Sampling Strategies for a Varying Sample Size (K B Panda)Estimation of Measurement Variance Under Two-Stage Sampling: Estimation of Population Mean (Pulakesh Maiti)The Interior-Point Revolution in Mathematical Programming and its Place in Applied Mathematics (J N Singh)Combined Exponential Type Estimators of Population Mean in Stratified Random Sampling (R Pandey, K Yadav & N S Thakur)An Analytical Study on Fractional Fokker-Planck Equation by Homotopy Analysis Transform Method (Jitendra Singh & Rajeev Kumar)L-Primitive Words in Submonoids of a Free Monoid (Shubh Narayan Singh & K V Krishna)Comparison of the Performance of Ranked Set Sampling with the Linear Regression Estimation (Rahbar Ali & Arun Kumar Sinha)Optimal Selection of Logistics Operating Channels for a Sustainable Reverse Supply Chain (Vernika Agarwal, Jyoti Dhingra Darbari & P C Jha)Reliability Measures of a Parallel-Unit System with Arbitrary Distributions of Random Variables (Jitender Kumar, M S Kadyan & S C Malik)Adoption and Evolution of FOSS: Key Factors in the Development of the Apache Web Server (Ranjan Kumar, Subhash Kumar & Sukanta Deb)Android/Tizen Based 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Jainath Yadav)A Novel Algorithm for Magic Squares (Govind Kumar Jha, Neeraj Kumar, Prabhat Ranjan & A P Shakya)A Note on Intelligent Street Light System (J Satheesh Kumar & C G Sreekaviya)An Overview of Test Case Optimization Using Meta-Heuristic Approach (Sushant Kumar, Prabhat Ranjan & R Rajesh)Smart City Traffic Management and Surveillance System for Indian Scenario (Tarun Kumar, Rohit Kumar Sachan & Dharmender Singh Kushwaha)Improving Attribute Inference Attack Using Link Prediction in Online Social Networks (Ashish Kumar & N C Rathore)A Dynamic Model on Computer Virus (Upendra Kumar)State of the Art In-Service Condition Monitoring Techniques of Rotary Machines (Krishna Kant Agrawal, Shekhar Verma & G N Pandey)Image Segmentation: A survey (K M Pooja & R Rajesh)Empirical Reliability Modeling of Transaction Oriented Autonomic Grid Service (Dharmendra Prasad Mahato & Ravi Shankar Singh)Performance Degradation of Language Identification System in Noisy Environment (Randheer Bagi & Jainath Yadav)Analysis of Software Fault Detection and Correction Processes with Log-Logistic Testing-Effort (Md Zafar Imam, Ishrat Jahan Ara & N Ahmad)Skewness Removal of LEACH Protocol for Wireless Sensor Networks (Vishal Gupta & M N Doja)A Novel Approach for Fast Handoff in WLAN (Mithilesh Patel, Bhavna Singh, Sonam Gupta, Anurag Jajoo & Pavan Kumar Mishra)Facial Expression Recognition Using Histogram of Oriented Gradients (Jyoti Kumari & R Rajesh)Cloud Computing: Comparative Study Own Server vs Cloud Server (Surendra Kumar Singh)Mobile and GIS Framework for Plantations and Nursery (E-Plantations) (Shailesh Kumar Shrivastava & S K Mahendran)Internet Traffic Classification: A Survey (Gargi Srivastava, M P Singh, Prabhat Kumar & J P Singh)Comprehensive Study of Search Engine (Sarowar Kumar, Kumar Abhishek, Abhay Kumar & M P Singh)A Survey on Social Networks: Issues and Attacks (Anubha Maurya & M P Singh)Reduced Rule for Banknote Genuinity (Chhotu Kumar & Anil Kumar Dudyala)A Study on Medical Diagnosis Based on Inter Valued Fuzzy Cluster Analysis (Bhagwan Sahay Meena & Sharmila Bhattacharjee) Readership: Undergraduate students, graduate students and researchers in mathematics, computer science and statistics.

Computer Analysis of Images and Patterns John Wiley & Sons

The two volume set LNCS 9474 and LNCS 9475 constitutes the refereed proceedings of the 11th International Symposium on Visual Computing, ISVC 2015, held in Las Vegas, NV, USA in December 2015. The 115 revised full papers and 35 poster papers presented in this book were carefully reviewed and selected from 260 submissions. The papers are organized in topical sections: Part I (LNCS 9474) comprises computational bioimaging; computer graphics; motion and tracking; segmentation; recognition; visualization; mapping; modeling and surface reconstruction; advancing autonomy for aerial robotics; medical imaging; virtual reality; observing humans; spectral imaging and processing; intelligent transportation systems; visual perception and robotic systems. Part II (LNCS 9475): applications; 3D computer vision; computer graphics; segmentation; biometrics; pattern recognition; recognition; and virtual reality.

Convergence and Hybrid Information Technology Morgan Kaufmann

For many fundamental problems of computer vision, adopting a graph-based framework can be straight-forward and very effective. In this thesis, I propose several graph-based inference methods tailored for different computer vision applications. It starts from studying contour-based object detection methods. In particular, We propose a novel framework for contour based object detection, by replacing the hough-voting framework with finding dense subgraph inference. Compared to previous work, we propose a novel shape matching scheme suitable for partial matching of edge fragments. The shape descriptor has the same geometric units as shape context but our shape representation is not histogram based. The key contribution is that we formulate the grouping of partial matching hypotheses to object detection hypotheses is expressed as maximum clique inference on a weighted graph. Consequently, each detection result not only identifies the location of the target object in the image, but also provides a precise location of its contours, since we transform a complete model contour to the image. We achieve very competitive results on ETHZ dataset, obtained in a pure shape-based framework, demonstrate that our method achieves not only accurate object detection but also precise contour localization on cluttered background. Similar to the task of grouping of partial matches in the contour-based method, in many computer vision problems, we would like to discover certain pattern among a large amount of data. For instance, in the application of unsupervised video object segmentation, where we need automatically identify the primary object and segment the object out in every frame. We propose a novel formulation of selecting object region candidates simultaneously in all frames as finding a maximum weight clique in a weighted region graph. The selected regions are expected to have high objectness score (unary potential) as well as share similar appearance (binary potential). Since both unary and binary potentials are unreliable, we introduce two types of mutex (mutual exclusion) constraints on regions in the same clique: intra-frame and inter-frame constraints. Both types of constraints are expressed in a single quadratic form. An efficient algorithm is applied to compute the maximal weight cliques that satisfy the constraints. We apply our method to challenging benchmark videos and obtain very competitive results that outperform state-of-the-art methods. We also show that the same maximum weight subgraph with mutex constraints formulation can be used to solve various computer vision problems, such as points matching, solving image jigsaw puzzle, and detecting object using 3D contours.

Biomedical Image Analysis Springer Science & Business Media

Computers have become an integral part of medical imaging systems and are used for everything from data acquisition and image generation to image display and analysis. As the scope and complexity of imaging technology steadily increase, more advanced techniques are required to solve the emerging challenges. Biomedical Image Analysis demonstr

Recent Advances in Multimedia Signal Processing and Communications Elsevier

This book constitutes the refereed proceedings of the 10th IFIP WG 12.5 International Conference on Artificial Intelligence Applications and Innovations, AIAI 2014, held in Rhodes, Greece, in September 2014. The 33 revised full papers and 29 short papers presented were carefully reviewed and selected from numerous submissions. They are organized in the following topical sections: learning-ensemble learning; social media and mobile applications of AI; hybrid-changing environments; agent (AGE); classification pattern recognition; genetic algorithms; image and video processing; feature extraction; environmental AI; simulations and fuzzy modeling; and data mining forecasting.

Fractal Analysis of Breast Masses in Mammograms Springer Nature

Cancer research is currently a vital field of study as it affects a wide range of the population either directly or indirectly. Breast and cervical cancer are two prevalent types that pose a threat to women’s health and wellness. Due to this, further research on the importance of medical informatics within this field is necessary to ensure patients receive the best possible attention and care. The Research Anthology on Medical Informatics in Breast and Cervical Cancer provides current research and information on how medical informatics are utilized within the field of breast and cervical cancer and considers the best practices and challenges of its implementation. Covering key topics such as women’s health, wellness, oncology, and patient care, this major reference work is ideal for medical professionals, nurses, oncologists, policymakers, researchers, academicians, scholars, practitioners, instructors, and students.

Medical Image Computing and Computer-Assisted Intervention – MICCAI 2016 Springer Science & Business Media

With the advances in image guided surgery for cancer treatment, the role of image segmentation and registration has become very critical. The central engine of any image guided surgery product is its ability to quantify the organ or segment the organ whether it is a magnetic resonance imaging (MRI) and computed tomography (CT), X-ray, PET, SPECT, Ultrasound, and Molecular imaging modality. Sophisticated segmentation algorithms can help the physicians delineate better the anatomical structures present in the input images, enhance the accuracy of medical diagnosis and facilitate the best treatment planning system designs. The focus of this book in towards the state of the art techniques in the area of image segmentation and registration.

Cardiovascular Imaging and Image Analysis CRC Press

This book offers the first comprehensive overview of artificial intelligence (AI) technologies in decision support systems for diagnosis based on medical images, presenting cutting-edge insights from thirteen leading research groups around the world. Medical imaging offers essential information on patients’ medical condition, and clues to causes of their symptoms and diseases. Modern imaging modalities, however, also produce a large number of images that physicians have to accurately interpret. This can lead to an “information overload” for physicians, and can complicate their decision-making. As such, intelligent decision support systems have become a vital element in medical-image-based diagnosis and treatment. Presenting extensive information on this growing field of AI, the book offers a valuable reference guide for professors, students, researchers and professionals who want to learn about the most recent developments and advances in the field.