 Nested Neural Networks

Complete guide to visual computing in medicine, fully revamped and updated with new developments in the field Illustrated throughout with over 800 new images and diagrams Includes new sections on image processing and analysis, validation and performance, and medical imaging In-depth coverage of medical images, models, and data sets, including PET, CT, X-ray, MRI, and ultrasound Offers a companion website offering additional content for professors, source code, algorithms, tutorials, videos, exercises, and animations This new edition includes six new chapters on treatment planning, guidance and training; an updated appendix on software tools for medicine; and a new global structure that better classifies and explains the major lines of work in the field. Preim and Botha illustrate visualization techniques from research, but also cover ideas on how to solve practical clinical problems. They base the book on several years of combined teaching and research experience.

Visual Computing for Medicine, Second Edition, offers cutting-edge visualization techniques and their applications in medical imaging and treatment. The book includes algorithms, applications, and ideas on achieving reliability of results and clinical utility. It covers medical images, models, and data sets, including PET, CT, X-ray, MRI, and ultrasound.
Since histogram analysis limits the extracted information to the number of pixels in specific gray levels and does not provide information about the spatial distribution of these pixels, the accuracy of a histogram-based method is limited. In the second algorithm, in order to increase the accuracy of brain lesion segmentation, a texture-based automated approach is presented. The experimental results on T1-weighted, T2-weighted, and fluid-attenuated inversion recovery (FLAIR) images on both simulated and real brain MRI data prove the efficacy of our approach.

Automated segmentation of brain lesions in magnetic resonance images (MRI) is a difficult procedure due to the variability in size, shape, and texture of these lesions. In this study, four algorithms for brain lesion detection and segmentation using MRI are proposed. In the first algorithm, an automatic algorithm for brain stroke lesion detection and segmentation is developed. In the second algorithm, a novel intensity-based algorithm for brain glioma segmentation is proposed, which is called histogram-based gravitational optimization algorithm (HGOA). HGOA is a novel intensity-based algorithm for brain glioma segmentation.

Automated Brain Lesion Detection and Segmentation Using Magnetic Resonance Images

Developing solutions and systems in the industrial and business arena, especially innovative commercial implementations, novel applications of technology, and experience in applying recent ICT research advances to practical solutions.

Documents, internet search indexing, medical records, business transactions, web logs, etc. Information and communication technologies (ICT) have become the asset in everyday life enabling increased level of communication, processing and information exchange. This volume contains latest research work presented at International Conference on Computing and Communication Systems held at North Eastern Hill University (NEHU), Shillong, India. The book presents original research results, new ideas and applications.

Brain Tumor MRI Image Segmentation Using Deep Learning Techniques

This book offers a description of deep learning approaches used to detect and segment brain tumors. The book demonstrates core concepts of deep learning algorithms by using diagrams, data tables and examples to illustrate brain tumor segmentation. After introducing basic concepts of deep learning-based brain tumor segmentation, we cover techniques for modeling, segmentation and properties. A focus is placed on the application of different types of deep neural networks including Convolutional Neural Networks (CNN), Recurrent Neural Networks (RNN), and Generative Adversarial Networks (GAN).

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Decision Forests

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High-Resolution Neuroimaging

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An Automatic Brain Tumor Detection And Segmentation Using

This book presents original contributions on the theories and practices of emerging Internet, data and Web technologies ... in businesses, engineering and academia, focusing on advances in the life-cycle exploitation of data generated from the...
An Automatic Brain Tumor Detection And Segmentation Using Medical Imaging: Concepts, Methodologies, Tools, and Applications

This book is ideally designed for researchers, academicians, physicians, IT consultants, medical software developers, and students seeking current research on biomedical advancements and developing computational methods in the field. The book provides a comprehensive coverage on a broad range of topics such as prediction models, edge computing, and quantitative measurements, this book offers insights into the latest advancements in biomedical technologies and their applications. It explores the theoretical and practical aspects of using Deep Neural Networks for Multimodal Imaging and Biomedical Applications, providing research exploring the theoretical and practical aspects of using deep learning for biomedical image analysis.

Implementing these biomedical technologies is crucial for the diagnosis and treatment of diseases. Radiologists and other clinicians interested in the current diagnostic approach to brain tumors will find this book to be an invaluable and enlightening clinical tool. Since the first edition, the book has been updated and new material has been added, including detailed information on the clinical application of functional MRI and diffusion tensor imaging.

This volume provides a deeper understanding of the diagnosis of brain tumors by correlating radiographic imaging features with pathological abnormalities. All modern imaging modalities are used to complete a diagnostic overview of brain tumors with specific emphasis on the role of MRI in the assessment of brain tumors.

The book is organized into chapters covering various aspects of biomedical imaging, including the use of artificial intelligence for medical image analysis of neuroimaging data. It includes chapters on brain lesion image analysis, precision medicine, and other relevant topics.

The two-volume set LNCS 11992 and 11993 constitutes the thoroughly refereed proceedings of the 5th International MICCAI Brainlesion Workshop, BrainLes 2019, the International Multimodal Brain Tumor Segmentation (BraTS) challenge, the Computational Precision Medicine: Radiology-Pathology Challenge on Brain Tumor Classification (CPM-RadPath) challenge, as well as the Computational Imaging 2019 conference. These proceedings provide a comprehensive overview of the latest research in the field of biomedical imaging and computational methods.