

Computational Intelligence in Medical Imaging: Techniques and Applications

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A compilation of the latest trends in the field, **Computational Intelligence in Medical Imaging: Techniques and Applications** explores how intelligent computing can bring enormous benefit to existing technology in medical image processing as well as improve medical imaging research. The contributors also cover state-of-the-art research toward integrating medical image processing with artificial intelligence and machine learning approaches.

The book presents numerous techniques, algorithms, and models. It describes neural networks, evolutionary optimization techniques, rough sets, support vector machines, tabu search, fuzzy logic, a Bayesian probabilistic framework, a statistical parts-based appearance model, a reinforcement learning-based multistage image segmentation algorithm, a machine learning approach, Monte Carlo simulations, and intelligent, deformable models. The contributors discuss how these techniques are used to classify wound images, extract the boundaries of skin lesions, analyze prostate cancer, handle the inherent uncertainties in mammographic images, and encapsulate the natural intersubject anatomical variance in medical images. They also examine prostate segmentation in transrectal ultrasound images, automatic segmentation and diagnosis of bone scintigraphy, 3-D medical image segmentation, and the reconstruction of SPECT and PET tomographic images.

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Editorial Review

Review

In choosing this book the reader will be exposed to the range of exciting research that is being conducted in the context of medical imaging. … I am sure that this collection of the latest trends and developments will further stimulate discussion and development of new solutions. The book will be of interest and relevance to anyone involved in the computational analysis and interpretation of images?whether medical or not. ?*International Statistical Review*, 2009

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