

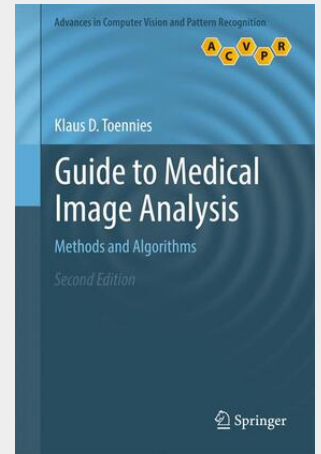
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Guide to Medical Image Analysis

Methods and Algorithms

This comprehensive guide provides a uniquely practical, application-focused introduction to medical image analysis. This fully updated new edition has been enhanced with material on the latest developments in the field, whilst retaining the original focus on segmentation, classification and registration. Topics and features: presents learning objectives, exercises and concluding remarks in each chapter; describes a range of common imaging techniques, reconstruction techniques and image artifacts, and discusses the archival and transfer of images; reviews an expanded selection of techniques for image enhancement, feature detection, feature generation, segmentation, registration, and validation; examines analysis methods in view of image-based guidance in the operating room (NEW); discusses the use of deep convolutional networks for segmentation and labeling tasks (NEW); includes appendices on Markov random field optimization, variational calculus and principal component analysis.

This comprehensive guide provides a uniquely practical, application-focused introduction to medical image analysis. The text presents a concise examination of each of the key concepts, enabling the reader to understand the interdependencies between them before delving deeper into the derivations and technical details. This fully updated new edition has been enhanced with material on the latest developments in the field, whilst retaining the original focus on segmentation, classification and registration. Topics and features: Presents learning objectives, exercises and concluding remarks in each chapter, in addition to a glossary of abbreviations - Describes a range of common imaging techniques, reconstruction techniques and image artifacts, and discusses the archival and transfer of images - Reviews an expanded selection of techniques for image enhancement, feature detection, feature generation, segmentation, registration, and validation (NEW) - Examines analysis methods in view of image-based guidance in the operating room, designed to aid the operator in adapting their intervention during an operation (NEW) - Discusses the use of deep convolutional networks for segmentation and labeling tasks, describing how this network architecture differs from multi-layer perceptrons (NEW) - Includes appendices on Markov random field optimization, variational calculus and principal component analysis This clearly-written guide/reference serves as a classroom-tested textbook for courses on medical image processing and analysis, with suggestions for course outlines supplied in the preface. Professionals in medical imaging technology, as well as computer scientists and electrical engineers specializing in medical applications, will also find the book an ideal resource for self-study.



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