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Results and Comparison; 3.8 Conclusion; 3.9 References; Chapter 4 Medical Image Enhancement Using Fourier Descriptors and Hybrid Filters; 4.1 Introduction; 4.2 Design of the Hybrid Filter; 4.3 Experimental Results  
4.4 Discussion and Conclusion 4.5 References; Part II Segmentation; Chapter 5 Overview and Fundamentals of Medical Image Segmentation; 5.1 Introduction; 5.2 Thresholding; 5.3 Region Growing; 5.4 Watershed Algorithm; 5.5 Edge-Based Segmentation Techniques; 5.6 Multispectral Techniques; 5.7 Other Techniques; 5.8 Concluding Remarks; 5.9 References; Chapter 6 Image Segmentation by Fuzzy Clustering: Methods and Issues; 6.1 Introduction; 6.2 The Quantitative Basis of Fuzzy Image Segmentation; 6.3 Qualitative Discussion of a Few Fuzzy Image Segmentation Methods; 6.4 Conclusions and Discussion 6.5 References Chapter 7 Segmentation with Neural Networks; 7.1 Introduction; 7.2 Structure and Function of the GRBF Network; 7.3 Training Procedure; 7.4 Application to Medical Image Segmentation; 7.5 Image Data; 7.6 Preprocessing; 7.7 Vector Quantization; 7.8 Classification; 7.9 Results; 7.10 Discussion; 7.11 Topical Applications, Conceptual Extensions, and Outlook; 7.12 Conclusion and Outlook; 7.13 References; Chapter 8 Deformable Models; 8.1 Introduction; 8.2 Mathematical Foundations of Deformable Models; 8.3 Medical Image Analysis with Deformable Models; 8.4 Discussion; 8.5 Conclusion 8.6 References Chapter 9 Shape Information in Deformable Models; 9.1 Background; 9.2 Global Shape Constraints; 9.3 Level Set Methods Incorporating Generic Constraints; 9.4 Conclusions; 9.5 References; Chapter 10 Gradient Vector Flow Deformable Models; 10.1 Introduction; 10.2 Background; 10.3 GVF Deformable Contours; 10.4 Experiments; 10.5 3D GVF Deformable Models and Results; 10.6 Discussion; 10.7 Conclusions; 10.8 References; Chapter 11 Fully Automated Hybrid Segmentation of the Brain; 11.1 Introduction; 11.2 Brain Segmentation Method; 11.3 Other Brain Segmentation Techniques; 11.4 Summary 11.5 References

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## Sommario/riassunto

The Handbook of Medical Image Processing and Analysis is a comprehensive compilation of concepts and techniques used for processing and analyzing medical images after they have been generated or digitized. The Handbook is organized into six sections that relate to the main functions: enhancement, segmentation, quantification, registration, visualization, and compression, storage and communication. The second edition is extensively revised and updated throughout, reflecting new technology and research, and includes new chapters on: higher order statistics for tissue segmentation; tumor g

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