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5.7 Skeletonization5.8 Validation of Segmentation Methods; 5.9 Registration and Fusion of Medical Image Data; 5.10 Summary; Part II: Volume Visualization; Chapter 6. Fundamentals of Volume Visualization; 6.1 The Volume Visualization Pipeline; 6.2 Histograms and Volume Classification; 6.3 Illumination in Scalar Volume Datasets; 6.4 Summary; Chapter 7. Indirect Volume Visualization; 7.1 Plane-Based Volume Rendering; 7.2 Surface-Based Volume Rendering; 7.3 Surface Postprocessing; 7.4 Summary; Chapter 8. Direct Volume Visualization; 8.1 Theoretical Models for Direct Volume Rendering
8.2 The Volume Rendering Pipeline8.3 Compositing; 8.4 Summary; Chapter 9. Algorithms for Direct Volume Visualization; 9.1 Ray Casting; 9.2 Shear Warp; 9.3 Splatting; 9.4 Texture-Mapping; 9.5 Other Direct Volume Rendering Approaches; 9.6 Direct Volume Rendering of Segmented Volume Data; 9.7 Hybrid Volume Rendering; 9.8 Validation of Volume Visualization Algorithms; 9.9 Summary; Chapter 10. Exploration of Dynamic Medical Volume Data; 10.1 Introduction; 10.2 Medical Background; 10.3 Basic Visualization Techniques; 10.4 Data Processing; 10.5 Advanced Visualization Techniques
10.6 Case Study: Tumor Perfusion10.7 Case Study: Brain Perfusion; 10.8 Summary; Part III: Exploration of Medical Volume Data; Chapter 11. Transfer Function Specification; 11.1 Strategies for One-Dimensional Transfer Functions; 11.2 Multidimensional Transfer Functions; 11.3 Gradient-based Transfer Functions; 11.4 Distance-based Transfer functions; 11.5 Local and Spatialized Transfer Functions; 11.6 Summary; Chapter 12. Clipping, Cutting, and Virtual Resection; 12.1 Clipping; 12.2 Virtual Resection; 12.3 Virtual Resection with a Deformable Cutting Plane; 12.4 Cutting Medical Volume Data
12.5 Summary

Sommario/riassunto

Visualization in Medicine is the first book on visualization and its application to problems in medical diagnosis, education, and treatment. The book describes the algorithms, the applications and their validation (how reliable are the results?), and the clinical evaluation of the applications (are the techniques useful?). It discusses visualization techniques from research literature as well as the compromises required to solve practical clinical problems. The book covers image acquisition, image analysis, and interaction techniques designed to explore and analyze the data. The