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Nota di contenuto	Chapter 1. Computer Aided Orthopaedic Surgery: Stateof-the-Art and Future Perspectives -- Chapter 2. Computer Aided Orthopaedic Surgery: incremental shift or paradigm change? -- Chapter 3. CAMISS concept and its clinical application -- Chapter 4. Surgical Navigation in Orthopaedics: Workow and System Review -- Chapter 5. Multi-Object Model-based Multi-Atlas Segmentation Constrained Grid Cut for Automatic Segmentation of Lumbar Vertebrae from CT Images -- Chapter 6. Deep Learning-based Automatic Segmentation of the Proximal Femur from MR Images -- Chapter 7. Muscle Segmentation for Orthopaedic Interventions -- Chapter 8. 3X-Knee: A Novel Technology for 3D Pre-operative Planning and Post-operative Evaluation of TKA based on 2DX-rays -- Chapter 9. Atlas-based 3D Intensity Volume Reconstruction from 2D Long Leg Standing X-rays: Application to Hard and Soft Tissues in Lower Extremity -- Chapter 10. 3D Ultrasound for Orthopedic Interventions -- Chapter 11. A novel ultrasound-based lower extremity motion tracking system -- Chapter 12. Computer Assisted Planning, Simulation and Navigation System for Periacetabular Osteotomy -- Chapter 13. Biomechanical Optimization-

based Planning of Periacetabular Osteotomy -- Chapter 14. Biomechanical Guidance System for Peri-Acetabular Osteotomy -- Chapter 15. GravityAssistedNavigationSystemforTotal HipArthroplasty -- Chapter 16. 3D Visualization and Augmented Reality for Orthopaedics -- Chapter 17. Intelligent HMI in orthopaedic navigation -- Chapter 18. Patient-Specific Surgical Guidance System for Intelligent Orthopaedics -- Chapter 19. Intelligent control for human-robot cooperation in orthopaedics surgery -- Chapter 20. Multilevel Fuzzy Control Based on Force Information in Robot-assisted Decompressive Laminectomy -- Chapter 21. Potentional risk of intelligent technologies in clinical orthopaedics -- Chapter 22. Clinical Application of Navigation in the Surgical Treatment of a Pelvic Ring Injury and Acetabular Fracture -- Chapter 23. Patient specific surgical guide for total hip arthroplasty -- Chapter 24. Computer navigation in orthopaedic tumour surgery -- Chapter 25. Sensor Based Soft Tissue Balancing in Total Knee Arthroplasty -- Chapter 26. Implant Orientation Measurement after THA Using the EOS X-Ray Image Acquisition System -- Chapter 27. 3D Printing in Spine Surgery.

Sommario/riassunto

This book introduces readers to the latest technological advances in the emerging field of intelligent orthopaedics. Artificial intelligence and smart instrumentation techniques are now revolutionizing every area of our lives, including medicine. The applications of these techniques in orthopaedic interventions offer a number of potential benefits, e.g. reduced incision size and scarring, minimized soft tissue damage, and decreased risk of misalignment. Consequently, these techniques have become indispensable for various orthopaedic interventions, which has led to the emerging field of intelligent orthopaedics. Addressing key technologies and applications, this book offers a valuable guide for all researchers and clinicians who need an update on both the principles and practice of intelligent orthopaedics, and for graduate students embarking on a career in this field.