

Cram S Introduction To Surface Electromyography Second Edition

This book answers the call to what today's physical therapy students and clinicians are looking for when integrating the guide to physical therapist practice as it relates to the musculoskeletal system in clinical care.

Seeking new methods to satisfy increasing communication demands, researchers continue to find inspiration from the complex systems found in nature. From ant-inspired allocation to a swarm algorithm derived from honeybees, Bio-Inspired Computing and Networking explains how the study of biological systems can significantly improve computing, networki

In recent years, many technologies for gait and posture assessments have emerged. Wearable sensors, active and passive in-house monitors, and many combinations thereof all promise to provide accurate measures of physical activity, gait, and posture parameters. Motivated by market projections for wearable technologies and driven by recent technological innovations in wearable sensors (MEMs, electronic textiles, wireless communications, etc.), wearable health/performance research is growing rapidly and has the potential to transform future healthcare from disease treatment to disease prevention. The objective of this Special Issue is to address and disseminate the latest gait, posture, and activity monitoring systems as well as various mathematical models/methods that characterize mobility functions. This Special Issue focuses on wearable monitoring systems and physical sensors, and its mathematical models can be utilized in varied environments under varied conditions to monitor health and performance

Through expanded intelligence, the use of robotics has fundamentally transformed a variety of fields, including manufacturing, aerospace, medicine, social services, and agriculture. Continued research on robotic design is critical to solving various dynamic obstacles individuals, enterprises, and humanity at large face on a daily basis. Robotic Systems: Concepts, Methodologies, Tools, and Applications is a vital reference source that delves into the current issues, methodologies, and trends relating to advanced robotic technology in the modern world. Highlighting a range of topics such as mechatronics, cybernetics, and human-computer interaction, this multi-volume book is ideally designed for robotics engineers, mechanical engineers, robotics technicians, operators, software engineers, designers, programmers, industry professionals, researchers, students, academicians, and computer practitioners seeking current research on developing innovative ideas for intelligent and autonomous robotics systems.

This Encyclopedia was designed with the overarching goal to collect together in a single resource the knowledge generated by this interdisciplinary field, highlighting the links between science and practice. In it, scholars, health care practitioners and the general public will find a wealth of information on topics such as physical activity, stress and health, smoking, pain management, social support and health, cardiovascular health, health promotion, and HIV/AIDS. This two-volume set includes more than 200 entries on topics covering all aspects of health and behavior. In addition, the Encyclopedia of Health and Behavior includes a comprehensive set of additional resources with entries on selected organizations and an appendix with a detailed annotated listing of such organizations as well as Web sites of interest.

This comprehensive book builds on the Introduction to Surface Electromyography (also available from Aspen). It covers each of the clinical applications of surface EMG, surface EMG evaluation and feedback, candidate selection, kinesiological and psychophysiological considerations patient training and numerous case examples. The book also provides a procedural approach to using surface EMG in clinical practice to either document the therapeutic process or as an aid in treatment of the condition.

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This second of two volumes on EMG (Electromyography) covers a wide range of clinical applications, as a complement to the methods discussed in volume 1. Topics range from gait and vibration analysis, through posture and falls prevention, to biofeedback in the treatment of neurologic swallowing impairment. The volume includes sections on back care, sports and performance medicine, gynecology/urology and orofacial function. Authors describe the procedures for their experimental studies with detailed and clear illustrations and references to the literature. The limitations of SEMG measures and methods for careful analysis are discussed. This broad compilation of articles discussing the use of EMG in both clinical and research applications demonstrates the utility of the method as a tool in a wide variety of disciplines and clinical fields.

A world list of books in the English language.

Cram's Introduction to Surface Electromyography Jones & Bartlett Learning

For 5 years, the Peripheral Nervous System-Machine Interfaces workgroup has dedicated itself to the recruitment of researchers, clinicians, and general public in a unified effort to advance the frontier of restoration of quality of life to those with limb deficiency. Our group's mission is to bring together experts from various domains to identify promising new technologies and new opportunities for inquiry and discovery in prosthetics research. This e-Book collects 10 cutting edge research articles written by members of the workgroup, covering three domains prioritized by the workgroup: novel prosthetic technology, approaches for reducing device rejection, and prosthetic control. In our summary editorial, we four principals of the workgroup reflect on our first 5 years, and project our vision for the future, as the Society for Prosthetics. Although we now have sophisticated algorithms and techniques for determining the shapes and sizes and for matching the fit between shoes and feet, few, if any, of the books currently available cover these new technologies until now. Bringing together high-quality and state-of-the-art contributions from designers, biomechanists, ergonomists, engineer

"This book provides an updated overview of signal processing applications and recent developments in EMG from a number of diverse aspects and various applications in clinical and experimental research"--Provided by publisher.

A complete overview of electromyography with contributions from pacesetters in the field In recent years, insights from the field of engineering have illuminated the vast potential of electromyography (EMG) in biomedical technology. Featuring contributions from key innovators working in the field today, Electromyography reveals the broad applications of EMG data in areas as diverse as neurology, ergonomics, exercise physiology, rehabilitation, movement analysis, biofeedback, and myoelectric control of prosthesis. Bridging the gap between engineering and physiology, this pioneering volume explains the essential concepts needed to detect, understand, process, and interpret EMG signals using non-invasive electrodes. Electromyography shows how engineering tools such as models and signal processing methods can greatly augment the insight provided by surface EMG signals. Topics covered include: Basic physiology and biophysics of EMG generation Needle and surface electrode detection techniques Signal conditioning and processing issues Single- and multi-channel techniques for information extraction Development and application of physical models Advanced signal processing techniques With its fresh engineering perspective, Electromyography offers physiologists, medical professionals, and students in biomedical engineering a new window into the far-reaching possibilities of this dynamic technology.

Artificial intelligence (AI) has featured widely in the news recently. It is vital to the continued development of computer science and informatics, and is indispensable for the effective functioning of a multitude of systems in fields such as medicine, economics, linguistics, philosophy, psychology and logical analysis, as well as industry. This book presents the proceedings of the 13th Scandinavian Conference on

Artificial Intelligence (SCAI 2015), held in Halmstad, Sweden, in November 2015. SCAI is the main biennial conference for the AI research communities of Scandinavia, but also attracts the attendance of a wide range of international participants. The book features 17 accepted papers from the conference as well as extended abstracts describing the work of six Ph.D. students who presented their research-in-progress to a panel of experts in the doctoral symposium which forms part of the conference. A wide range of topics are covered, including machine learning, data mining, logical reasoning, robotics and planning, and the papers included here focus on both the theory and practical applications of AI. The book will be of interest to all those wishing to keep abreast of the latest developments in the field of AI.

Focussing on the key technologies in developing robots for a wide range of medical rehabilitation activities – which will include robotics basics, modelling and control, biomechanics modelling, rehabilitation strategies, robot assistance, clinical setup/implementation as well as neural and muscular interfaces for rehabilitation robot control – this book is split into two parts; a review of the current state of the art, and recent advances in robotics for medical rehabilitation. Both parts will include five sections for the five key areas in rehabilitation robotics: (i) the upper limb; (ii) lower limb for gait rehabilitation (iii) hand, finger and wrist; (iv) ankle for strains and sprains; and (v) the use of EEG and EMG to create interfaces between the neurological and muscular functions of the patients and the rehabilitation robots. Each chapter provides a description of the design of the device, the control system used, and the implementation and testing to show how it fulfills the needs of that specific area of rehabilitation. The book will detail new devices, some of which have never been published before in any journal or conference.

This comprehensive volume is widely regarded as the definitive practitioner resource and text resource in the field of biofeedback and applied psychophysiology. Leading experts cover basic concepts, assessment, instrumentation, clinical procedures, and professional issues. Chapters describe how traditional and cutting-edge methods are applied in treatment of a wide range of disorders, including headaches, temporomandibular disorders, essential hypertension, pelvic floor disorders, attention-deficit/hyperactivity disorder, tinnitus, and others. Applications for optimizing physical performance among artists and athletes are also reviewed. A wealth of information and empirical research is presented in an accessible style, including helpful glossaries. New to This Edition *Incorporates significant technological developments and new research areas. *Expanded focus on specialized applications, such as electroencephalographic (EEG) biofeedback/neurofeedback and heart rate variability biofeedback. *Chapters on surface electromyography, quantitative EEG, and consumer products. *Chapters on cognitive-behavioral therapy and relaxation training. *Chapters on additional clinical problems: anxiety disorders, asthma, work-related pain, traumatic brain injury, autism spectrum disorders, and substance use disorders.

This authoritative reference, the Sixth Edition of an internationally acclaimed bestseller, offers the most up-to-date information available on multidisciplinary pain diagnosis, treatment, and management. Pain Management: A Practical Guide for Clinicians is a compilation of literature written by members of The American Academy of Pain Management, the largest multidisciplinary society of pain management professionals in North America and the largest physician-based pain society in the United States. This unique reference covers both traditional and alternative approaches and discusses the pain of children as well as adult and geriatric patients. It includes approximately 60 new chapters and each chapter is written to allow the reader to read independently topics of interest and thus may be viewed as a self-contained study module. The collection of chapters allows an authoritative self-study on many of the pressing issues faced by pain practitioners. Regardless of your specialty or medical training or whether you are in a

large hospital or a small clinic, if you work with patients in need of pain management, this complete reference is for you. This is the first new book in many years to provide a comprehensive review of the latest theory, research, and treatment of chronic headaches from a biopsychological perspective. It is designed to make the tools of assessment and therapy widely accessible, while placing them in the context of how the disorders arise. The physiology and psychology of pain, and each disorder, are reviewed in an accessible manner. Clinical experience, laboratory data, and illustrative vignettes aid in treatment selection. Part I introduces the major types of headaches and provides a comprehensive review of pain. Part II details the major forms of headaches—migraine, tension-type, cluster, secondary, and headaches in children. A clinical presentation introduces each type of headache, followed by the physiological and psychological underpinnings and their implications for assessing and treating patients. Part III serves as a clinical guide for practitioners. The book closes with an analysis of how well the treatments work, the mechanisms behind the efficacy, and guidelines for treatment matching. A range of practical tools is incorporated. Clinical evaluation is reviewed in depth, including the interview, psychometrics, and psychophysiological assessment. Key sections of the 2004 International Headache Society diagnostic criteria serve as a “mini” diagnostic manual. Tables allow rapid look-up of the various disorders and their distinguishing characteristics; trigger point referral patterns; and the comparative merits of migraine medications. Blank headache diaries, appropriate for various stages of treatment, serve as models. A relaxation exercise is provided, as are muscle tension and hand temperature norms. Key terms are defined in the extensive glossary to help psychologists and medical professionals share vocabulary. Medical, herbal, and behavioral therapies are discussed in terms of the underlying science. *Chronic Headaches* is intended for healthcare providers, pain specialists, psychologists, researchers, and clinicians who study headaches in a variety of disciplines. This accessible, student-tested text is ideal for graduate courses on the psychology of pain and/or chronic headaches. Readers will gain expertise in headaches and a clear sense of how to translate this knowledge into clinical practice.

The book titled *Advanced Computational and Communication Paradigms: Proceedings of International Conference on ICACCP 2017, Volume 1* presents refereed high-quality papers of the First International Conference on Advanced Computational and Communication Paradigms (ICACCP 2017) organized by the Department of Computer Science and Engineering, Sikkim Manipal Institute of Technology, held from 8– 10 September 2017. ICACCP 2017 covers an advanced computational paradigms and communications technique which provides failsafe and robust solutions to the emerging problems faced by mankind.

Technologists, scientists, industry professionals and research scholars from regional, national and international levels are invited to present their original unpublished work in this conference. There were about 550 technical paper submitted. Finally after peer review, 142 high-quality papers have been accepted and registered for oral presentation which held across 09 general sessions and 05 special sessions along with 04 keynote address and 06 invited talks. This volume comprises 65 accepted papers of ICACCP 2017.

There is a clear need for a more comprehensive and inclusive body of information for supplementary and alternate treatment of

urological conditions. To meet this need, our book will compile evidence-based information for clinicians, healthcare providers, and patients. As the first comprehensive educational guidebook focusing on alternative therapies for urological ailments, this book will be useful for healthcare providers as well as patients suffering from these conditions (including urinary tract infections, benign prostatic hyperplasia, kidney stones, incontinence, and pelvic pain) who are looking for alternative and supplementary remedies. Many physicians and patients are reluctant to use these remedies and this book will demystify this area in urology.

Chronic Pain Management: Guidelines for Multidisciplinary Program Development is the most comprehensive textbook to date on the multidisciplinary approach to chronic pain management. Written by an illustrious group of contributors, this volume serves as a must-have armamentarium of guidelines for the development of a successful pain management program within the context of current medical and insurance reimbursement climates. Backed by the American Academy of Pain Management, the book enables readers to understand the benefits of multidisciplinary chronic pain management and helps them apply these techniques to their clinic for effective, consistent, and financially viable patient care. An essential how-to manual for anyone in the field, the book: Emphasizes multidisciplinary chronic pain management as an alternative to surgery, chronic opioid therapy, and interventional approaches Contains best practices for the maintenance of a high-quality cost-effective chronic pain management center Discusses suggestions to enhance cooperation between the numerous groups involved in the care of chronic pain patients Offers strategies for clinician-insurer collaboration resulting in clinically-effective, cost-efficient treatment Describes how to achieve accreditation, and how to develop policies and procedures Helps insurance industry and government agencies recognize the importance of the multidisciplinary approach to pain management

Fundamentals of Sleep Technology provides a thorough understanding of the use of polysomnography and other technologies in the evaluation and management of sleep disorders. Coverage includes in-depth reviews of the neurophysiology and cardiopulmonary aspects of sleep, along with the pathophysiology of sleep disorders. Detailed sections on polysomnography include recording procedures, identifying and scoring sleep stages and sleep-related events, and report generation. Chapters discuss therapeutic interventions including positive airway pressure, supplemental oxygen, surgical and pharmacologic treatments, and patient education. A section focuses on pediatric sleep disorders and polysomnography. Also included are chapters on establishing and managing a sleep center and accrediting a sleep program. **Fundamentals of Sleep Technology** is endorsed by American Association of Sleep Technologists (AAST). AAST committees oversaw the development of this book, defining the table of contents, recruiting the Editors, and providing most of the contributors.

A comprehensive resource for health professions students and practitioners, including physical and occupational therapists, chiropractors, and behavioral medicine students, **Cram's Introduction to Surface Electromyography** clearly explains how to use SEMG to treat a variety of neuromuscular conditions. It covers the development of SEMG, instrumentation, assessment, and treatment, and features a detailed atlas for electrode placement. This updated edition includes expanded "quick reference" items created by Glenn Kasman, as well as a new chapter on Assessment and Treatment of Neuromuscular Disorders. The chapter on

Dynamic Assessment and Treatment of Musculoskeletal Problems has also been updated and revised. With a quick reference section and an atlas including line drawings and color photographs, this text is a valuable resource for health professions students and practitioners.

This book is a printed edition of the Special Issue "Low Back Pain: Recent Advances And Perspectives" that was published in Healthcare

Therapeutic Exercise for Musculoskeletal Injuries, Fourth Edition With Online Video, presents foundational information that instills a thorough understanding of rehabilitative techniques. Updated with the latest in contemporary science and peer-reviewed data, this edition prepares upper-undergraduate and graduate students for everyday practice while serving as a referential cornerstone for experienced rehabilitation clinicians. The text details what is happening in the body, why certain techniques are advantageous, and when certain treatments should be used across rehabilitative time lines. Accompanying online video demonstrates some of the more difficult or unique techniques and can be used in the classroom or in everyday practice. The content featured in Therapeutic Exercise for Musculoskeletal Injuries aligns with the Board of Certification's (BOC) accreditation standards and prepares students for the BOC Athletic Trainers' exam. Author and respected clinician Peggy A. Houglum incorporates more than 40 years of experience in the field to offer evidence-based perspectives, updated theories, and real-world applications. The fourth edition of Therapeutic Exercise for Musculoskeletal Injuries has been streamlined and restructured for a cleaner presentation of content and easier navigation. Additional updates to this edition include the following:

- An emphasis on evidence-based practice encourages the use of current scientific research in treating specific injuries.
- Full-color content with updated art provides students with a clearer understanding of complex anatomical and physiological concepts.
- 40 video clips highlight therapeutic techniques to enhance comprehension of difficult or unique concepts.
- Clinical tips illustrate key points in each chapter to reinforce knowledge retention and allow for quick reference.

The unparalleled information throughout Therapeutic Exercise for Musculoskeletal Injuries, Fourth Edition, has been thoroughly updated to reflect contemporary science and the latest research. Part I includes basic concepts to help readers identify and understand common health questions in examination, assessment, mechanics, rehabilitation, and healing. Part II explores exercise parameters and techniques, including range of motion and flexibility, proprioception, muscle strength and endurance, plyometrics, and development. Part III outlines general therapeutic exercise applications such as posture, ambulation, manual therapy, therapeutic exercise equipment, and body considerations. Part IV synthesizes the information from the previous segments and describes how to create a rehabilitation program, highlighting special considerations and applications for specific body regions. Featuring more than 830 color photos and more than 330 illustrations, the text clarifies complicated concepts for future and practicing rehabilitation clinicians. Case studies throughout part IV emphasize practical applications and scenarios to give context to challenging concepts. Most chapters also contain Evidence in Rehabilitation sidebars that focus on current peer-reviewed research in the field and include applied uses for evidence-based practice. Additional learning aids have been updated to help readers absorb and apply new content; these include chapter objectives, lab activities, key points, key terms, critical thinking questions, and references. Instructor ancillaries, including a presentation package plus image bank, instructor guide, and test package, will be accessible online. Therapeutic Exercise for Musculoskeletal Injuries, Fourth Edition, equips readers with comprehensive material to prepare for and support real-world applications and clinical practice. Readers will know what to expect when treating clients, how to apply evidence-based knowledge, and how to develop custom individual programs.

These transactions publish research in computer-based methods of computational collective intelligence (CCI) and their applications in a wide range of fields such as the semantic Web, social networks, and multi-agent systems. TCCI strives to cover new methodological, theoretical and practical aspects of CCI understood as the form of intelligence that emerges from the collaboration and competition of many individuals (artificial and/or natural). The application of multiple computational intelligence technologies, such as fuzzy systems, evolutionary computation, neural systems, consensus theory, etc., aims to support human and other collective intelligence and to create new forms of CCI in natural and/or artificial systems. This twenty-ninth issue is a regular issue with 10 selected papers. ?

This book presents high-quality papers from the Seventh Asia International Symposium on Mechatronics (AISM 2019). It discusses the latest technological trends and advances in electromechanical coupling and environmental adaptability design for electronic equipment, sensing and measurement, mechatronics in manufacturing and automation, micro-mechatronics, energy harvesting & storage, robotics, automation and control systems. It includes papers based on original theoretical, practical and experimental simulations, development, applications, measurements, and testing. The applications and solutions discussed here provide excellent reference material for future product developments.

Based on recent research, this book discusses physical ergonomics, which is concerned with human anatomical, anthropometric, physiological and biomechanical characteristics as they relate to physical activity. Topics include working postures, materials handling, repetitive movements, work-related musculoskeletal disorders, workplace layout, safety, and health.

Published in association with the British Association of Sport and Exercise Sciences, this is the only up-to-date, practical guide to using the range of biomechanics movement analysis machines, equipment and software available today. It includes detailed explanations of the key theory underlying biomechanics testing, along with advice concerning choice of equipment and how to use your laboratory equipment most effectively. The book covers the following important topics in detail: motion analysis using video and on-line systems measurement of force and pressure in the laboratory and field measurement of power using isokinetic dynamometry electromyography computational simulation and modelling of human movement research methodologies, data processing and data smoothing. Contributors include world leading researchers and pioneers such as Roger Bartlett, Carl Payton, Vasilios (Bill) Baltzopoulos, Adrian Burden, John H. Challis, and computer modelling maestro Fred Yeadon. Biomechanical Evaluation of Movement in Sport and Exercise is a must-have text for all biomechanics laboratories and students undertaking research.

Therapeutic Engineering (TE) is a cutting-edge domain in today's era of medical technology research. Through engineering algorithms that provide technological solutions, it aims to elevate the quality of life of disabled individuals. Advances in Therapeutic Engineering describes various therapeutic processes and mechanisms currently applied to the field of healthcare in a range of areas, including mobility, communications, hearing, vision, and mental health and cognition. The book explores research and advances in the areas of hand-eye coordination, motor function, the biomechanics of lower limbs, and treatment of spinal diseases and neural plasticity. It discusses electrical stimulation methodologies for improving human gait. It also examines prosthetic devices and assistive technology, induction heater-based treatment, and inclusive user modelling and simulation. Additional chapters cover automated asthma detection using clinico-spirometric information, computer-aided diagnostic modules for malaria screening, and various data mining techniques that have been developed and successfully implemented in healthcare management. The contributors also examine semantic interoperability issues in e-health systems and clinical decision support systems (CDSSs) Ranging from prosthetics to sensory substitution and medical robotics, the book will prove

enlightening to researchers and practitioners in a host of disciplines who want to understand the recent advances achieved globally in the field of therapeutic engineering.

Electromyography (EMG) is a technique for evaluating and recording the electrical activity produced by skeletal muscles. EMG may be used clinically for the diagnosis of neuromuscular problems and for assessing biomechanical and motor control deficits and other functional disorders. Furthermore, it can be used as a control signal for interfacing with orthotic and/or prosthetic devices or other rehabilitation assists. This book presents an updated overview of signal processing applications and recent developments in EMG from a number of diverse aspects and various applications in clinical and experimental research. It will provide readers with a detailed introduction to EMG signal processing techniques and applications, while presenting several new results and explanation of existing algorithms. This book is organized into 18 chapters, covering the current theoretical and practical approaches of EMG research.

This book reports on the latest advances in the study of biomedical signal processing, and discusses in detail a number of open problems concerning clinical, biomedical and neural signals. It methodically collects and presents in a unified form the research findings previously scattered throughout various scientific journals and conference proceedings. In addition, the chapters are self-contained and can be read independently. Accordingly, the book will be of interest to university researchers, R&D engineers and graduate students who wish to learn the core principles of biomedical signal analysis, algorithms, and applications, while also offering a valuable reference work for biomedical engineers and clinicians who wish to learn more about the theory and recent applications of neural engineering and biomedical signal processing.

Surface EMG is a popular tool used by physical therapists, occupational therapists, and chiropractors in both assessing and treating a wide range of neuromusculoskeletal disorders. This book provides the basics of surface EMG. It addresses such questions as what is EMG? Why use surface EMG? When and how is it used? Featuring a complete Atlas for Electrode Placement, the book introduces electrode placement strategies for various disorders, understanding and interpreting the surface EMG signal, and basic formulations for treatment strategies. Each chapter includes clinical examples to orient the practitioner to surface EMG's potential use.

It is with great pleasure that we present to you a collection of over 200 high quality technical papers from more than 10 countries that were presented at the Biomed 2008. The papers cover almost every aspect of Biomedical Engineering, from artificial intelligence to biomechanics, from medical informatics to tissue engineering. They also come from almost all parts of the globe, from America to Europe, from the Middle East to the Asia-Pacific. This set of papers presents to you the current research work being carried out in various disciplines of Biomedical Engineering, including new and innovative researches in emerging areas. As the organizers of Biomed 2008, we are very proud to be able to come-up with this publication. We owe the success to many individuals who worked very hard to achieve this: members of the Technical Committee, the Editors, and the International Advisory Committee. We would like to take this opportunity to record our thanks and appreciation to each and every one of them. We are pretty sure that you will find many of the

papers illuminating and useful for your own research and study. We hope that you will enjoy yourselves going through them as much as we had enjoyed compiling them into the proceedings. Assoc. Prof. Dr. Noor Azuan Abu Osman Chairperson, Organising Committee, Biomed 2008

This is the first textbook to comprehensively cover the experimental methods used in biomechanics. Designed for graduate students and researchers studying human biomechanics at the whole-body level, the book introduces readers to the theory behind the primary data collection methods and primary methods of data processing and analysis used in biomechanics. Each individual chapter covers a different aspect of data collection or data processing, presenting an overview of the topic at hand and explaining the math required for understanding the topic. A series of appendices provide the specific math that is required for understanding the chapter contents. Each chapter leads readers through the techniques used for data collection and processing, providing sufficient theoretical background to understand both the how and why of these techniques. Chapters end with a set of review questions, and then a bibliography which is divided into three sections (cited references, specific references, and useful references). Provides a comprehensive and in depth presentation on methods in whole-body human biomechanics; First textbook to cover both collection and processing in a single volume; Appendices provide the math needed for the main chapters. .

The three-volume set LNCS 10433, 10434, and 10435 constitutes the refereed proceedings of the 20th International Conference on Medical Image Computing and Computer-Assisted Intervention, MICCAI 2017, held in Quebec City, Canada, in September 2017. The 255 revised full papers presented were carefully reviewed and selected from 800 submissions in a two-phase review process. The papers have been organized in the following topical sections: Part I: atlas and surface-based techniques; shape and patch-based techniques; registration techniques, functional imaging, connectivity, and brain parcellation; diffusion magnetic resonance imaging (dMRI) and tensor/fiber processing; and image segmentation and modelling. Part II: optical imaging; airway and vessel analysis; motion and cardiac analysis; tumor processing; planning and simulation for medical interventions; interventional imaging and navigation; and medical image computing. Part III: feature extraction and classification techniques; and machine learning in medical image computing.

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