Wearable Ehealth Systems For Personalised Health Management State Of The Art And Future Challenges Studies In Health Technology And Informatics

This three-volume-set (CCIS 219, CCIS 220, and CCIS 221) constitutes the refereed proceedings of the International Conference on ENTERprise Information Systems, CENTERIS 2011, held in Vilamoura, Portugal, in September 2011. The approx. 120 revised full papers presented in the three volumes were carefully reviewed and selected from 180 submissions. The papers are organized in topical sections on knowledge society, EIS adoption and design, EIS implementation and impact, EIS applications, social aspects and IS in education, IT/IS management, telemedicine and imaging technologies, healthcare information management, medical records and business processes, decision support systems and business intelligence in health and social care contexts, architectures and emerging technologies in healthcare organizations, as well as m-health.

Both the MIC and the Belgium e-Health Conference share new trends in health informatics and present many timely ideas and practical proposals. They are directed at healthcare professionals who lead the transformation of healthcare by using information and knowledge. This combined proceedings describes a follow up of research projects and the development of standards for “e-Health in Belgium and in the Netherlands”. It covers topical subjects such as nursing and care process, the electronic patient record and knowledge bases, as well as ICT assessment.

An advanced look at smart technology to promote the independence of the elderly and disabled Ongoing research and advancements in technology are essential for the continuing independence of elderly and disabled persons. The Engineering Handbook of Smart Technology for Aging, Disability, and Independence provides a thorough analysis of these technologies and the needs of the elderly and disabled, including a breakdown of demographics, government spending, growth rate, and much more. Each chapter is written by an expert in his or her respective field, and gives readers unparalleled insight into the research and developments in a multitude of important areas, including: User-need analyses, classifications, and policies Assistive devices and systems for people with motor disabilities Assistive devices and systems for people with visual and hearing impairments Human-machine interaction and virtual reality Assistive robotics Technology for user mobility and object manipulation Smart homes as assistant environments A discussion of emerging standards and guidelines to build accessible devices, tools, and environments This book is an indispensable resource for researchers and professionals in computer science, rehabilitation science, and clinical engineering. It also serves as a valuable textbook for graduate students in the aforementioned fields.

This book constitutes the refereed proceedings of the First European Conference on Ambient Intelligence, Aml 2007, held in Darmstadt, Germany, in November 2007. The 17 revised full papers presented together with five research reports were carefully reviewed and selected from 48 submissions. The papers are organized in topical sections. The book is rounded off by a section on case studies and lessons learned, presenting a high level selection of current research reports and papers.

The E-Medicine, E-Health, M-Health, Telemedicine, and Telehealth Handbook provides extensive coverage of modern telecommunication in the medical industry, from sensors on and within the body to electronic medical records and beyond. Telemedicine and Electronic Medicine is the first volume of this handbook. Featuring chapters written by leading experts and researchers in their respective fields, this volume: Describes the integration of—and interactions between—modern eMedicine, telemedicine, eHealth, and telehealth practices Explains how medical information flows through wireless technologies and networks, emphasizing fast-deploying wireless body area networks Presents the latest developments in sensors, devices, and implantables, from medical sensors for mobile communication devices to drug-delivery systems Illustrates practical telemedicine applications in telecardiology, teleendoscopy, teleoncology, acute care telemedicine, and more The E-Medicine, E-Health, M-Health, Telemedicine, and Telehealth Handbook bridges the gap between scientists, engineers, and medical professionals by creating synergy in the related fields of biomedical engineering, information and communication technology, business, and healthcare.
Throughout the world, healthcare professionals often lack knowledge of the possibilities and limitations of systematically processing data, information and knowledge and of the resulting impact on quality decision-making. They are often asked to use information technologies of which they have limited appreciation in order to enhance their practices through better use of information resources. However, for systematically processing data, information and knowledge in medicine and in healthcare, healthcare professionals who are well-trained in medical informatics or health informatics are needed. It will only be through improved education of healthcare professionals and through an increase in the number of well-trained workers in health and medical informatics that this lack of knowledge and associated skills can begin to be reversed. Although we can recognize further progress in educating health and a considerable number of educational programs for health informatics/medical informatics specialists have been set up, there is still a need to enhance these educational activities world wide, considering global developments as well as new curricular concepts and technological opportunities. This book is especially helpful for educators in the field of health/medical informatics.

This wide-ranging summary of bioelectronics provides the state of the art in electronics integrated and interfaced with biological systems in one single book. It is a perfect reference for those involved in developing future distributed diagnostic devices, from smart bio-phones that will monitor our health status to new electronic devices serving our bodies and embedded in our clothes or under our skin. All chapters are written by pioneers and authorities in the key branches of bioelectronics and provide examples of real-word applications and step-by-step design details. Through expert guidance, you will learn how to design complex circuits whilst cutting design time and cost and avoiding mistakes, misunderstandings, and pitfalls. An exhaustive set of recently developed devices is also covered, providing the implementation details and inspiration for innovating new solutions and devices. This all-inclusive reference is ideal for researchers in electronics, bio/nanotechnology, and applied physics, as well as circuit and system-level designers in industry.

Advances in mobile computing have provided numerous innovations that make people’s daily lives easier and more convenient. However, as technology becomes more ubiquitous, corresponding risks increase as well. Managing Security Issues and the Hidden Dangers of Wearable Technologies examines the positive and negative ramifications of emerging wearable devices and their potential threats to individuals, as well as organizations. Highlighting socio-ethical issues, policy implementation, and appropriate usage, this book is a pivotal reference source for professionals, policy makers, academics, managers, and students interested in the security and privacy implications of wearable digital devices.

The technology on our body, in our body and all around us enhances our health and well-being from conception to death. This environment is emerging now with intelligent caring machines, cyborgs, wireless embedded continuous computing, healthwear, sensors, healthons, nanomedicine, adaptive process control, mathematical modeling and common sense systems. The human body and the world in which it functions is a continuously changing complex adaptive system. We are able to collect more and more data about it but the real challenge is to infer local dynamics from that data. Intelligent Caring Biomechatronic Creatures and Healthmaticians (mathematicians serving human health) have a better chance of inferring the dynamics that needs to be understood than human physicians. Humans can only process comfortably three dimensions while computers can see infinite number of dimensions. We will need to trust the distributed network of healthons, Intelligent Caring Creatures, and NURSES (New Unified Resource System Engineers) to create Health Intelligence. We need new vocabulary to push forward in a new way. For instance: healthons are tools combining prevention with diagnosis and treatment, based on continuous monitoring and analyzing of our vital signs and biochemistry. The ‘Healthon Era’ is just beginning. We are closer and closer to the world with healthons on your body, in your body and all around you; where not a doctor but your primary care healthmatician warns you about an approaching headache; and where NURSE programs your intelligent caring creatures so they can talk to your cells and stop disease in its tracks.

Written by industry experts, this book aims to provide you with an understanding of how to design and work with wearable sensors. Together these insights provide the first single source of information on wearable sensors that would be a valuable addition to the library of any engineer interested in this field. Wearable Sensors covers a wide variety of topics associated with the development and application of various wearable sensors. It also provides an overview and coherent summary of many aspects of current wearable sensor technology. Both industry professionals and academic researchers will benefit from this comprehensive reference which contains the most up-to-date information on the advancement of lightweight hardware, energy harvesting, signal processing, and wireless communications and networks. Practical problems with smart fabrics, biomonitoring and health informatics are all addressed, plus end user centric design, ethical and safety issues. Provides the first comprehensive resource of all currently used wearable devices in an accessible and structured manner. Helps engineers manufacture wearable devices with information on current technologies, with a focus on end user needs and recycling requirements. Combines the expertise of professionals and academics in one practical and applied source.

With skyrocketing costs due to the increase in the elderly population, a rapid increase in lifestyle-related and chronic diseases, demand for new medical treatments and technologies, and a shortage in the number of available clinicians, nurses, and other caregivers, the challenges facing the healthcare industry seem insurmountable. However, by tra
This publication, initiated by the Korean Society of Medical Informatics (KOSMI) and its Nursing Informatics Specialist Group, and the Special Interest Group in Nursing Informatics of the International Medical Informatics Association (IMIA-NI), is published for nurses and informatics experts working with informatics applications in nursing care, administration, research and education, bringing together the worlds of nursing informatics community. Korea is well known for having the highest level of Information and Communication Technology (ICT) accessibility in the world. Advances in ICT in Korea have lead Korean health care sectors to fully utilize the benefit of ICT for health care. The theme of the book, ‘Consumer-Centered Computer-Supported Care for Healthy People’, emphasises the central role of the consumer and the function of information technology in health care. It reflects the major challenge in our time, which is developing and using information technology for the improvement of consumer oriented health care. “I would seriously recommend that this book - in text form - should be available in all nursing libraries as a resource for study and reference in the expanding area of nursing and health care.”--Paula M. Procter, Reader in Informatics and Telematics in Nursing, The University of Sheffield, United Kingdom.

Machine intelligence will eclipse human intelligence within the next few decades - extrapolating from Moore's Law - and our world will enjoy limitless computational power and ubiquitous data networks. Today's iPod® devices portend an era when biology and information technology will fuse to create a human experience radically different from our own. Already, our healthcare systems will be supported by the vast amounts of data generated by the human genome, recalling the promise and scale of the International Human Genome Project. The challenge is to build a tightly linked ecosystem of high performance computing, information and communications technology, and well-crafted human health perception systems that will work together to achieve a new generation of healthcare.

This book constitutes the refereed proceedings of the 5th International Conference On Smart Homes and Health Telematics, ICOST 2007, held in Nara, Japan in June 2007. It presents the latest approaches and technical solutions in the area of smart homes, health telematics, and emerging enabling technologies.

This publication starts with a review of plaque imaging techniques, with an introduction of the segmentation techniques for plaque classification and quantification. Many aspects of plaque imaging techniques are presented in this publication, such as; medical image retrieval and database management, MRI techniques to differentiate stable versus high risk atherosclerosis, composition and morphology of atherosclerotic plaque, analysis of the soft tissue based on computer vision techniques, modelling of coronary artery biomechanics, plaque imaging techniques for coronary artery stents, and recent developments in cardiovascular imaging. One particular subject, atherosclerotic plaque imaging by FT (focusing on coronary calcium imaging), feasibility of a non-invasive, in vivo determination of the IBS of arterial wall tissue, high resolution ultrasound images of carotid plaques, the problem of reliable features extraction and classification process and a discussion on advanced mathematical techniques to extract spectral information from the RF data to determine the plaque composition.

Biomedical sensors are an essential tool in the detection and monitoring of a wide range of medical conditions from cancer to Parkinson's disease. Biosensors for medical applications provides a comprehensive review of established, cutting edge and future trends in biomedical sensors and their applications. Part one focuses on key principles and transduction approaches, reviewing electrochemical, piezoelectric and nano-sized biosensors. Impedence interrogated affinity biosensors for medical applications and practical applications of enzyme biosensors are explored, before part two goes on to review specific medical applications. Biosensors for DNA and RNA detection and characterization, disease biomarker detection, and the use of affibodies as an alternative to antibodies in cancer marker biosensors are investigated, along with biosensors for drug testing and discovery, non-invasive measurements, and wearable biosensors for medical applications. With its distinguished editor and international team of expert contributors, Biosensors for medical applications is an essential guide for all those involved in the research, design, production and use of medical biosensors. Provides a comprehensive review of established, cutting edge and future trends in biomedical sensors and their applications Examines key principles and transduction approaches, reviewing electrochemical, piezoelectric and nano-sized biosensors Reviews biosensors for DNA and RNA detection and characterisation, disease biomarker detection, and the use of affibodies as an alternative to antibodies in cancer marker biosensors

The development and advancement of personalised health management systems requires the consideration of advances in sensor technologies and advanced textiles in addition to nano technologies and evolving information and communication technologies. We are now living in an environment where changes in healthcare structures and requests from patients to have an increased participation in their own healthcare are demanding the availability of affordable and readily available personalised health management systems. Recent research has taken us a step closer in providing such solutions, however, efforts are still required to address the issues of integration of new technologies into existing health care practices, implications of interoperability of services, analysis of results following large scale clinical evaluations and development of technology which is small, reliable and affordable by its users. This publication shows a synergy between research efforts in three diverse areas; sensor technologies, advanced textiles and nanotechnology and computing. It brings together researchers from academia, industry and clinical healthcare provision and emphasises the need for multi-disciplinary collaborations in the future developments of personalised health management systems.
Having now come of age, telemedicine has the potential of having a greater impact on the future of medicine than any other modality. Telemedicine, in the final analysis, brings reality to the vision of an enhanced accessibility of medical care and a global network of healthcare, which was not even imagined two decades ago. Today, the field of telemedicine has expanded rapidly and is likely to assume greater importance in healthcare delivery in the coming times. To address the developing trend of telemedicine applications in both urban and rural areas throughout the world, this book has been designed to discuss different technologies which are being applied in the field of telemedicine and their applications including advances in wireless technologies, the use of fibre optics in telecommunication, availability of broadband Internet, digital imaging technologies and compressed video techniques that have eliminated the problems of telemedicine and also reduced the cost. Starting with the basic hospital based telemedicine system and leading to mHealth, teleHealth and eHealth, the book covers as to how various physiological signals are acquired from the body, processed and used for monitoring the patients anywhere anytime. The book is primarily intended for undergraduate and postgraduate students of Biomedical Engineering, Biomedical Instrumentation, Computer Science and Information Technology and Hospital Management and Nursing. KEY FEATURES • Covers all aspects of telemedicine technology, including medical devices, telecommunications, networking and interfacing techniques • Provides step-by-step coverage on how to set up a telemedicine centre • Includes broad application areas of telemedicine • Covers essentials of telemedicine including mHealth, eHealth and teleHealth • Provides abbreviations/acronyms and glossary of commonly used terms in telemedicine

"This multi-volume book delves into the many applications of information technology ranging from digitizing patient records to high-performance computing, to medical imaging and diagnostic technologies, and much more"--

This book constitutes the refereed proceedings of the 13th Conference on Artificial Intelligence in Medicine, AIME 2011, held in Bled, Slovenia, in July 2011. The 42 revised full and short papers presented together with 2 invited talks were carefully reviewed and selected from 113 submissions. The papers are organized in topical sections on knowledge-based systems; data mining; special session on AI applications; probabilistic modeling and reasoning; terminologies and ontologies; temporal reasoning and temporal data mining; therapy planning, scheduling and guideline-based care; and natural language processing.

This book is dedicated to wearable and autonomous systems, including devices, offers to variety of users, namely, master degree students, researchers and practitioners, An opportunity of a dedicated and a deep approach in order to improve their knowledge in this specific field. The book draws the attention about interesting aspects, as for instance, advanced wearable sensors for enabling applications, solutions for arthritic patients in their limited and conditioned movements, wearable gate analysis, energy harvesting, physiological parameter monitoring, communication, pathology detection , etc..

Biomedical Engineering is a highly interdisciplinary and well established discipline spanning across engineering, medicine and biology. A single definition of Biomedical Engineering is hardly unanimously accepted but it is often easier to identify what activities are included in it. This volume collects works on recent advances in Biomedical Engineering and provides a bird-view on a very broad field, ranging from purely theoretical frameworks to clinical applications and from diagnosis to treatment.

Arguably medicine is either an arts-based science or a science-based art. In medieval times, clinical decisions were based on simple measures, such as the temperature of the body, the rhythm of the pulse, the consistency of the stool and the colour of the urine. Nowadays, thanks partly to modern technology, medical science has improved in many ways, as has healthcare. In particular, approaches which have their origins in Artificial Intelligence and Operational Research have a significant contribution to make in terms of improving not only diagnosis and treatment of patients, but also providing ways of managing patients in a more effective, more efficient, and more patient-friendly manner. This book focuses on the use of such Intelligent Patient Management to the benefit of clinicians, other healthcare and community practitioners and managers, patients and carers.

The International Council on Medical and Care Compunetics (ICMCC) wants to emphasize the computing and networking synergies in medicine and (health)care. The term compunetics was introduced to present the union of computing and (social) networking. ICMCC wants to bring together as many aspects of medical and care compunetics as possible by forming a Global Knowledge Center. The availability of information works on both the B2B and the BTC level, as the structure will aim at both the consumers and the professionals (caregivers). Patients / consumers will be able to obtain information related to their illness or handicaps, so that they will be more knowledgeable about possible treatments and treatment alternatives. Professionals will be able to find relevant information (medical, technical, scientific) in a fast and efficient way. Industry (and more specifically SME's) will have access to technical information from a central portal. The shifting paradigm of health from reparative to preventive will enhance the necessity of consumer related information that, when efficiently obtained, can be of great economical benefit. In a world where the need for care is growing rapidly and where it is impossible to expect a growth in the number of caregivers, information is becoming more and more crucial. Not only because an informed patient is an economic benefit, but also because awareness amongst professionals about developments in their own and related fields can save enormous amounts of money. ICMCC will build a global network of professionals in medicine and care. Clinicians, pharmacologists, managers, care practitioners, patients, policy makers, IT specialists will all be represented.

Wearable technologies are equipped with microchips and sensors capable of tracking and wirelessly communicating information in real time. With innovations on the horizon, the future of wearable devices will go beyond answering calls or counting our steps to providing us with sophisticated wearable gadgets capable of addressing fundamental and technological challenges. This book investigates the development of wearable technologies across a range of applications from educational assessment to health, biomedical sensing, and energy harvesting. Furthermore, it discusses some key innovations in micro/nano fabrication of these technologies, their basic working mechanisms, and the challenges facing their progress.
This book constitutes the thoroughly refereed post-conference proceedings of the Third International Conference, eHealth 2010, held in Casablanca, Morocco, in December 2010. The 30 revised full papers presented along with 12 papers from 2 collocated workshops were carefully reviewed and selected from 70 submissions in total and cover a wide range of topics including web intelligence, privacy, trust and security, ontologies and knowledge management, eLearning and education, Web 2.0 and online communications of practice, and performance monitoring and evaluation frameworks for healthcare.

This book consists of papers describing developments and trends all over the world in the areas of smart wearable monitoring and diagnostic systems, smart treatment systems, biomedical clothing and smart fibres and fabrics. Advances in technology continue to alter the ways in which we conduct our lives, from the private sphere to how we interact with others in public. As these innovations become more integrated into modern society, their applications become increasingly relevant in various facets of life. Wearable Technologies: Concepts, Methodologies, Tools, and Applications is a comprehensive reference source for the latest scholarly material on the development and implementation of wearables within various environments, emphasizing the valuable resources offered by these advances. Highlighting a range of pertinent topics, such as assistive technologies, data storage, and health and fitness applications, this multi-volume book is ideally designed for researchers, academics, professionals, students, and practitioners interested in the emerging applications of wearable technologies.

Smart clothes and wearable technology is a relatively novel and emerging area of interdisciplinary research within the fashion, textile, electronics and related industries. This book provides a comprehensive review of the end-user's requirements and the technologies and materials available for the design and production of smart clothing. Part one looks at the design of smart clothing and wearable technology including the emergence of wearable computing, end-user requirements, and the design process from fibre selection to product launch. Part two examines the general requirements for merging of a range of textile structures with technology and communications for wearable technologies. Part three reviews the types of production technologies available for the development of smart clothing, including garment construction and fabric joining, and the final part discusses the application of these new technologies in smart clothing products and their presentation to consumers. Smart clothes and wearable technology is a unique and essential reference source for researchers, designers and engineers developing textiles and clothing products in this cross-disciplinary area. It is also beneficial for those in the healthcare industry and academics researching textiles, fashion and design. Examines this emerging area of textile research including a brief history and industry overview. Assesses the technologies and materials available for the design and production of smart clothing. Summarises requirements for smart textiles from both health and performance perspectives.

The new generation of wearable personal eHealth systems has to be affordable, user-friendly, “invisible”, autonomous in terms of power consumption and able to assist individuals in their own health management. Major challenges are ahead such as further research and development, user acceptance and trust, cost-effectiveness and business models. Intelligent Biomedical Clothing and biomedical sensors are becoming major driving forces for cutting-edge developments. The synergy and close collaboration of all involved disciplines and sectors is of paramount importance. This book consists of papers describing developments and trends all over the world in the areas of smart wearable monitoring and diagnostic systems, smart treatment systems, biomedical clothing and smart fibres and fabrics. It covers also non-research aspects such as citizens and patients needs, interoperability, risk management and market perspectives. The chapters are preceded by a short executive summary which highlights the main issues, findings and conclusions for the convenience of the reader. The participation of the major actors involved in research, development, decision making and business should make this book unique and a pioneer in the field.

This open access volume focuses on the development of a P5 eHealth, or better, a methodological resource for developing the health technologies of the future, based on patients’ personal characteristics and needs as the fundamental guidelines for design. It provides practical guidelines and evidence based examples on how to design, implement, use and elevate new technologies for healthcare to support the management of incurable, chronic conditions. The volume further discusses the criticalities of eHealth, why it is difficult to employ eHealth with an individualized point of view or why patients do not always accept the technology, and how eHealth interventions can be improved in the future. By dealing with the state-of-the-art in eHealth technologies, this volume is of great interest to researchers in the field of physical and mental healthcare, psychologists, stakeholders and policymakers as well as technology developers working in the healthcare sector.

Smart or intelligent textiles are a relatively novel area of research within the textile industry with enormous potential within the healthcare industry. This book provides a unique insight into recent developments in how smart textiles are being used in the medical field. The first part of the book assesses trends in smart medical textiles. Chapters cover topics such as wound care materials, drug-based release systems and electronic sensors for health care. The second part of the book discusses the role of smart textile in monitoring the health of particular groups such as pregnant women, children, the elderly and those with particular physical disabilities. With its distinguished editor and team of international contributors, this book provides a unique and essential reference to those concerned with intelligent textiles in healthcare. Unlocks the significant potential of smart textiles within the healthcare industry. Provides a unique insight into recent developments in this exciting field.

The two volume set LNAI 6703 and LNAI 6704 constitutes the thoroughly refereed conference proceedings of the 24th International Conference on Industrial Engineering and Other Applications of Applied Intelligent Systems, IEA/AIE 2011, held in Syracuse, NY, USA, in June/July 2011. The total of 92 papers selected for the proceedings were carefully reviewed and selected from 206 submissions. The papers cover a wide number of topics including feature extraction, discretization, clustering, classification, diagnosis, data refinement, neural networks, genetic algorithms, learning classifier systems, Bayesian and probabilistic methods, image processing, robotics, navigation, optimization, scheduling, routing, game theory and agents, cognition, emotion, and beliefs.
With the rapid advances in nanotechnology, telecommunication and information technologies, efficient and reliable telemedicine (also known as remote point of care or remote healthcare), is now coming into practice. This new monograph in the ASME-Momentum Press series on Biomedical & Nanomedical Technologies discusses the development and application of mobile wearable nano-bio health monitoring systems for telemedicine. It shows how nanomaterials-based biosensors are used to remotely measure physiological signals, such as electrocardiogram (ECG), electroencephalogram (EEG), electromyogram (EMG), and electrooculogram (EOG). Case studies and the technical challenges still ahead wrap up this informative introduction to a rapidly evolving field.

This book constitutes the thoroughly refereed post-conference proceedings of five international workshops held in conjunction with PAKDD 2011 in Shenzhen, China, in May 2011: the International Workshop on Behavior Informatics (BI 2011), the Workshop on Quality Issues, Measures of Interestingness and Evaluation of Data Mining Models (QIMIE 2011), the Workshop on Biologically Inspired Techniques for Data Mining (BDM 2011), the Workshop on Advances and Issues in Traditional Chinese Medicine Clinical Data Mining (AI-TCM 2011), and the Second Workshop on Data Mining for Healthcare Management (DMGHM 2011). The book also includes papers from the First PAKDD Doctoral Symposium on Data Mining (DSDM 2011). The 42 papers were carefully reviewed and selected from numerous submissions. The papers cover a wide range of topics discussing emerging techniques in the field of knowledge discovery in databases and their application domains extending to previously unexplored areas such as data mining based on optimization techniques from biological behavior of animals and applications in Traditional Chinese Medicine clinical research and health care management.

Describes the basic research procedures used in the area of driving behavior and highway safety.

This book covers the state-of-the-art approaches for automated non-invasive systems for early cardiovascular disease diagnosis. It includes several prominent imaging modalities such as MRI, CT, and PET technologies. There is a special emphasis placed on automated imaging analysis techniques, which are important to biomedical imaging analysis of the cardiovascular system. Novel 4D based approach is a unique characteristic of this product. This is a comprehensive multi-contributed reference work that will detail the latest developments in spatial, temporal, and functional cardiac imaging. The main aim of this book is to help advance scientific research within the broad field of early detection of cardiovascular disease. This book focuses on major trends and challenges in this area, and it presents work aimed to identify new techniques and their use in biomedical image analysis. Key Features: Includes state-of-the art 4D cardiac image analysis Explores the aspect of automated segmentation of cardiac CT and MR images utilizing both 3D and 4D techniques Provides a novel procedure for improving full-cardiac strain estimation in 3D image appearance characteristics Includes extensive references at the end of each chapter to enhance further study

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