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"Every year between 250 000 and 500 000 people suffer a spinal cord injury, with road traffic crashes, falls and violence as the three leading causes. People with spinal cord injury are two to five times more likely to die prematurely. They also have lower rates of school enrollment and economic participation than people without such injuries. Spinal cord injury has costly consequences for the individual and society, but it is preventable, survivable and need not preclude good health and social inclusion. Ensuring an adequate medical and rehabilitation response, followed by supportive services and accessible environments, can help minimize the disruption to people with spinal cord injury and their families. The aims of International perspectives on spinal cord injury are to: ---assemble and summarize information on spinal cord injury, in particular the epidemiology, services, interventions and policies that are relevant, together with the lived experience of people with spinal cord injury; ---make recommendations for actions based on this evidence that are consistent with the aspirations for people with disabilities as expressed in the Convention on the Rights of Persons with Disabilities.

The authoritative reference on NEURON, the simulation environment for modeling biological neurons and neural networks that enjoys wide use in the experimental and computational neuroscience communities. This book shows how to use NEURON to construct and apply empirically based models. Written primarily for neuroscience investigators, teachers, and students, it assumes no previous knowledge of computer programming or numerical methods. Readers with a background in the physical sciences or mathematics, who have some knowledge about brain cells and circuits and are interested in computational modeling, will also find it helpful. The NEURON Book covers material that ranges from the inner workings of this program, to practical considerations involved in specifying the anatomical and biophysical properties that are to be represented in models. It uses a problem-solving approach, with many working examples that readers can try for themselves. This volume presents the proceedings of Medicon 2016, held in Paphos, Cyprus. Medicon 2016 is the XIV in the series of regional meetings of the International Federation of Medical and Biological Engineering (IFMBE) in the Mediterranean. The goal of Medicon 2016 is to provide updated information on the state of the art on Medical and Biological Engineering and Computing under the main theme "Systems Medicine for the Delivery of Better Healthcare Services". Medical and Biological Engineering and Computing cover complementary disciplines that hold great promise for the advancement of research and development in complex medical and biological systems. Research and development in these areas are impacting the science and technology by advancing fundamental concepts in translational medicine, by helping us understand human physiology and function at multiple levels, by improving tools and techniques for the detection, prevention and treatment of disease. Medicon 2016 provides a common platform for the cross fertilization of ideas, and to help shape knowledge and scientific achievements by bridging complementary disciplines into an interactive and attractive forum under the special theme of the conference that is Systems Medicine for the Delivery of Better Healthcare Services. The programme consists of some 290 invited and submitted papers on new developments around the Conference theme, presented in 3 plenary sessions, 29 parallel scientific sessions and 12 special sessions.

The book will help assist a reader in the development of techniques for analysis of biomedical signals and computer aided diagnoses with a pedagogical examination of basic and advanced topics accompanied by over 350 figures and illustrations. Wide range of filtering techniques presented to address various applications 800 mathematical expressions and equations Practical questions, problems and laboratory exercises Includes fractals and chaos theory with biomedical applications

The Handbook of Multimodal-Multisensor Interfaces provides the first authoritative resource on what has become the dominant paradigm for new computer interfaces: user input involving new media (speech, multi-touch, hand and body gestures, facial expressions, writing) embedded in multimodal-multisensor interfaces that often include biosignals. This edited collection is written by international experts and pioneers in the field. It provides a textbook, reference, and technology roadmap for professionals working in this and related areas. This second volume of the handbook begins with multimodal signal processing, architectures, and machine learning. It includes recent deep learning approaches for processing multisensorial and multimodal user data and interaction, as well as context-sensitivity. A further highlight is processing of information about users' states and traits, an exciting emerging capability in next-generation user interfaces. These

chapters discuss real-time multimodal analysis of emotion and social signals from various modalities, and perception of affective expression by users. Further chapters discuss multimodal processing of cognitive state using behavioral and physiological signals to detect cognitive load, domain expertise, deception, and depression. This collection of chapters provides walk-through examples of system design and processing, information on tools and practical resources for developing and evaluating new systems, and terminology and tutorial support for mastering this rapidly expanding field. In the final section of this volume, experts exchange views on the timely and controversial challenge topic of multimodal deep learning. The discussion focuses on how multimodal-multisensor interfaces are most likely to advance human performance during the next decade.

This book is concerned with sensory cue integration both within and between sensory modalities, and focuses on the emerging way of thinking about cue combination in terms of uncertainty. These probabilistic approaches derive from the realization that our sensors are noisy and moreover are often affected by ambiguity. For example, mechanoreceptor outputs are variable and they cannot distinguish if a perceived force is caused by the weight of an object or by force we are producing ourselves. The probabilistic approaches elaborated in this book aim at formalizing the uncertainty of cues. They describe cue combination as the nervous system's attempt to minimize uncertainty in its estimates and to choose successful actions. Some computational approaches described in the chapters of this book are concerned with the application of such statistical ideas to real-world cue-combination problems. Others ask how uncertainty may be represented in the nervous system and used for cue combination. Importantly, across behavioral, electrophysiological and theoretical approaches, Bayesian statistics is emerging as a common language in which cue-combination problems can be expressed.

Accompanying CD-ROM contains ... "a companion eBook version of Molecular diagnostics : for the clinical laboratorian, Second edition ... for downloading and use in the reader's PC or PDA."--Page 4 of cover.

This book constitutes the refereed proceedings of the International Conference on Computer Vision and Graphics, ICCVG 2020, held in Warsaw, Poland, in September 2020. The 20 full papers were selected from 49 submissions. The contributions cover topics such as: modelling of human visual perception; computational geometry; geometrical models of objects and scenes; illumination and reflection models and methods; image formation; image and video coding; image filtering and enhancement; biomedical image processing; biomedical graphics; colour image processing; multispectral image processing; pattern recognition in image processing; scene understanding; motion analysis, visual navigation and active vision; human motion detection and analysis; visualisation and graphical data presentation; hardware and architectures for image processing; computer-aided graphic design; 3D imaging, shading and rendering; computer animation; graphics for internet and mobile systems; virtual reality; image and video databases; digital watermarking; multimedia applications; and computer art. Due to the Corona pandemic ICCVG 2020 was held as a virtual event.

The Handbook of Multimodal-Multisensor Interfaces provides the first authoritative resource on what has become the dominant paradigm for new computer interfaces-user input involving new media (speech, multi-touch, hand and body gestures, facial expressions, writing) embedded in multimodal-multisensor interfaces. This three-volume handbook is written by international experts and pioneers in the field. It provides a textbook, reference, and technology roadmap for professionals working in this and related areas. This third volume focuses on state-of-the-art multimodal language and dialogue processing, including semantic integration of modalities. The development of increasingly expressive embodied agents and robots has become an active test bed for coordinating multimodal dialogue input and output, including processing of language and nonverbal communication. In addition, major application areas are featured for commercializing multimodal-multisensor systems, including automotive, robotic, manufacturing, machine translation, banking, communications, and others. These systems rely heavily on software tools, data resources, and international standards to facilitate their development. For insights into the future, emerging multimodal-multisensor technology trends are highlighted in medicine, robotics, interaction with smart spaces, and similar areas. Finally, this volume discusses the societal impact of more widespread adoption of these systems, such as privacy risks and how to mitigate them. The handbook chapters provide a number of walk-through examples of system design and processing, information on practical resources for de-

veloping and evaluating new systems, and terminology and tutorial support for mastering this emerging field. In the final section of this volume, experts exchange views on a timely and controversial challenge topic, and how they believe multimodal-multisensor interfaces need to be equipped to most effectively advance human performance during the next decade.

Neural engineering is a discipline that uses engineering techniques to understand, repair, replace, enhance, or treat diseases of neural systems. Currently, no book other than this one covers this broad range of topics within motor rehabilitation technology. With a focus on cutting edge technology, it describes state-of-the-art methods within this field, from brain-computer interfaces to spinal and cortical plasticity. Touching on electrode design, signal processing, the neurophysiology of movement, robotics, and much more, this innovative volume collects the latest information for a wide range of readers working in biomedical engineering.

This easy-to-follow applied book on semiparametric regression methods using R is intended to close the gap between the available methodology and its use in practice. Semiparametric regression has a large literature but much of it is geared towards data analysts who have advanced knowledge of statistical methods. While R now has a great deal of semiparametric regression functionality, many of these developments have not trickled down to rank-and-file statistical analysts. The authors assemble a broad range of semiparametric regression R analyses and put them in a form that is useful for applied researchers. There are chapters devoted to penalized spines, generalized additive models, grouped data, bivariate extensions of penalized spines, and spatial semiparametric regression models. Where feasible, the R code is provided in the text, however the book is also accompanied by an external website complete with datasets and R code. Because of its flexibility, semiparametric regression has proven to be of great value with many applications in fields as diverse as astronomy, biology, medicine, economics, and finance. This book is intended for applied statistical analysts who have some familiarity with R.

Frontiers in Tissue Engineering is a carefully edited compilation of state-of-the-art contributions from an international authorship of experts in the diverse subjects that make up tissue engineering. A broad representation of the medical, scientific, industrial and regulatory community is detailed in the book. The work is an authoritative and comprehensive reference source for scientists and clinicians working in this emerging field. The book is divided into three parts: fundamentals and methods of tissue engineering, tissue engineering applied to specialised tissues, and tissue engineering applied to organs. The text offers many novel approaches, including a detailed coverage of cell-tissue interactions at cellular and molecular levels; cell-tissue surface, biochemical, and mechanical environments; biomaterials; engineering design; tissue-organ function; new approaches to tissue-organ regeneration and replacement of function; ethical considerations of tissue engineering; and government regulation of tissue-engineered products.

Brain Inspired Cognitive Systems 2008 (June 24-27, 2008; São Luís, Brazil) brought together leading scientists and engineers who use analytic, syntactic and computational methods both to understand the prodigious processing properties of biological systems and, specifically, of the brain, and to exploit such knowledge to advance computational methods towards ever higher levels of cognitive competence. This book includes the papers presented at four major symposia: Part I - Cognitive Neuroscience Part II - Biologically Inspired Systems Part III - Neural Computation Part IV - Models of Consciousness.

A detailed and thorough reference on the discipline and practice of systems engineering The objective of the International Council on Systems Engineering (INCOSE) Systems Engineering Handbook is to describe key process activities performed by systems engineers and other engineering professionals throughout the life cycle of a system. The book covers a wide range of fundamental system concepts that broaden the thinking of the systems engineering practitioner, such as system thinking, system science, life cycle management, specialty engineering, system of systems, and agile and iterative methods. This book also defines the discipline and practice of systems engineering for students and practicing professionals alike, providing an authoritative reference that is acknowledged worldwide. The latest edition of the INCOSE Systems Engineering Handbook: Is consistent with ISO/IEC/IEEE 15288:2015 Systems and software engineering—System life cycle processes and the Guide to the Systems Engineering Body of Knowledge (SEBoK) Has been updated to include the latest concepts of the INCOSE working groups Is the body of knowledge for the INCOSE Certification Process This book is ideal for any engineering professional who has an interest in or needs to apply systems engineering practices. This includes the experienced sys-

tems engineer who needs a convenient reference, a product engineer or engineer in another discipline who needs to perform systems engineering, a new systems engineer, or anyone interested in learning more about systems engineering.

The Handbook of Multimodal-Multisensor Interfaces provides the first authoritative resource on what has become the dominant paradigm for new computer interfaces— user input involving new media (speech, multi-touch, gestures, writing) embedded in multimodal-multisensor interfaces. These interfaces support smart phones, wearables, in-vehicle and robotic applications, and many other areas that are now highly competitive commercially. This edited collection is written by international experts and pioneers in the field. It provides a textbook, reference, and technology roadmap for professionals working in this and related areas. This first volume of the handbook presents relevant theory and neuroscience foundations for guiding the development of high-performance systems. Additional chapters discuss approaches to user modeling and interface designs that support user choice, that synergistically combine modalities with sensors, and that blend multimodal input and output. This volume also highlights an in-depth look at the most common multimodal-multisensor combinations—for example, touch and pen input, haptic and non-speech audio output, and speech-centric systems that co-process either gestures, pen input, gaze, or visible lip movements. A common theme throughout these chapters is supporting mobility and individual differences among users. These handbook chapters provide walk-through examples of system design and processing, information on tools and practical resources for developing and evaluating new systems, and terminology and tutorial support for mastering this emerging field. In the final section of this volume, experts exchange views on a timely and controversial challenge topic, and how they believe multimodal-multisensor interfaces should be designed in the future to most effectively advance human performance.

Man-Machine Interaction is an interdisciplinary field of research that covers many aspects of science focused on a human and machine in conjunction. Basic goal of the study is to improve and invent new ways of communication between users and computers, and many different subjects are involved to reach the long-term research objective of an intuitive, natural and multimodal way of interaction with machines. The rapid evolution of the methods by which humans interact with computers is observed nowadays and new approaches allow using computing technologies to support people on the daily basis, making computers more usable and receptive to the user's needs. This monograph is the third edition in the series and presents important ideas, current trends and innovations in the man-machine interactions area. The aim of this book is to introduce not only hardware and software interfacing concepts, but also to give insights into the related theoretical background. Reader is provided with a compilation of high-quality original papers covering a wide scope of research topics divided into eleven sections, namely: human-computer interactions, robot control, embedded and navigation systems, bio data analysis and mining, biomedical signal processing, image and sound processing, decision support and expert systems, rough and fuzzy systems, pattern recognition, algorithms and optimization, computer networks and mobile technologies and data management systems.

Helping Doctoral Students Write offers a proven approach to effective doctoral writing. By treating research as writing and writing as research, the authors offer pedagogical strategies for doctoral supervisors that will assist the production of well-argued and lively dissertations. It is clear that many doctoral candidates find research writing complicated and difficult, but the advice they receive often glosses over the complexities of writing and/or locates the problem in the writer. Kamler and Thomson provide a highly effective framework for scholarly work that is located in personal, institutional and cultural contexts. The pedagogical approach developed in the book is based on the notion of writing as a social practice. This approach allows supervisors to think of doctoral writers as novices who need to learn new ways with words as they enter the discursive practices of scholarly communities. This involves learning sophisticated writing practices with specific sets of conventions and textual characteristics. The authors offer supervisors practical advice on helping with commonly encountered writing tasks such as the proposal, the journal abstract, the literature review and constructing the dissertation argument. The first edition of this book has helped many academics and thousands of research students produce better written material. Now fully updated the second edition includes: Examples from a broader range of academic disciplines A new chapter on writing from the thesis for peer reviewed journals More advice on reading and note taking, performance and conferences, Further information on developing a personal academic writing style, and Advice on the use of social media (blogs, tweets and wikis) to create trans-disciplinary and trans-national networks and conversations. Their discussion of the complexities of forming a scholarly identity is illustrated throughout by stories and writings of actual doctoral students. In conclusion, they present a persuasive and proven argument that universities must move away from simply auditing supervision to supporting the development of scholarly research communities. Any supervisor keen to help their students develop as aca-

demics will find the ideas and practical solutions presented in this book fascinating and insightful reading.

This volume constitutes the proceedings of the 8th International Work-Conference on IWBIO 2020, held in Granada, Spain, in May 2020. The total of 73 papers presented in the proceedings, was carefully reviewed and selected from 241 submissions. The papers are organized in topical sections as follows: Biomarker Identification; Biomedical Engineering; Biomedical Signal Analysis; Bio-Nanotechnology; Computational Approaches for Drug Design and Personalized Medicine; Computational Proteomics and Protein-Protein Interactions; Data Mining from UV/VIS/NIR Imaging and Spectrophotometry; E-Health Technology, Services and Applications; Evolving Towards Digital Twins in Healthcare (EDITH); High Performance in Bioinformatics; High-Throughput Genomics: Bioinformatic Tools and Medical Applications; Machine Learning in Bioinformatics; Medical Image Processing; Simulation and Visualization of Biological Systems.

Four top experts provide a plan to help prevent the Parkinson's pandemic, improve care and treatment, and end the silence associated with this devastating disease. Brain diseases are now the world's leading source of disability. The fastest growing of these is Parkinson's: the number of people with Parkinson's doubled to over 6 million over the last 25 years and is projected to double again by 2040. Harmful pesticides known to cause Parkinson's proliferate, many people remain undiagnosed and untreated, research funding stagnates, and the most effective treatment is now a half century old. In Ending Parkinson's Disease, four leading doctors and advocates offer a bold but actionable pact to prevent, advocate for, care for, and treat one of the great health challenges of our time. This is a critical guide for anyone who has or could be touched by this disease.

In modern medicine, imaging is the most effective tool for diagnostics, treatment planning and therapy. Almost all modalities have went to directly digital acquisition techniques and processing of this image data have become an important option for health care in future. This book is written by a team of internationally recognized experts from all over the world. It provides a brief but complete overview on medical image processing and analysis highlighting recent advances that have been made in academics. Color figures are used extensively to illustrate the methods and help the reader to understand the complex topics.

Theoretically, multiwavelets hold significant advantages over standard wavelets, particularly for solving more complicated problems, and hence are of great interest. Meeting the needs of engineers and mathematicians, this book provides a comprehensive overview of multiwavelets. The author presents the theory of wavelets from the viewpoint of genera

Most startups fail. But many of those failures are preventable. The Lean Startup is a new approach being adopted across the globe, changing the way companies are built and new products are launched. Eric Ries defines a startup as an organization dedicated to creating something new under conditions of extreme uncertainty. This is just as true for one person in a garage or a group of seasoned professionals in a Fortune 500 boardroom. What they have in common is a mission to penetrate that fog of uncertainty to discover a successful path to a sustainable business. The Lean Startup approach fosters companies that are both more capital efficient and that leverage human creativity more effectively. Inspired by lessons from lean manufacturing, it relies on "validated learning," rapid scientific experimentation, as well as a number of counter-intuitive practices that shorten product development cycles, measure actual progress without resorting to vanity metrics, and learn what customers really want. It enables a company to shift directions with agility, altering plans inch by inch, minute by minute. Rather than wasting time creating elaborate business plans, The Lean Startup offers entrepreneurs—in companies of all sizes—a way to test their vision continuously, to adapt and adjust before it's too late. Ries provides a scientific approach to creating and managing successful startups in a age when companies need to innovate more than ever.

This book summarizes the NATO Advanced Research Workshop (ARW) on "Nanoengineered Systems for Regenerative Medicine" that was organized under the auspices of the NATO Security through Science Program. I would like to thank NATO for supporting this workshop via a grant to the co-directors. The objective of ARW was to explore the various facets of regenerative medicine and to highlight role of the "the nano-length scale" and "nano-scale systems" in defining and controlling cell and tissue environments. The development of novel tissue regenerative strategies require the integration of new insights emerging from studies of cell-matrix interactions, cellular signalling processes, developmental and systems biology, into biomaterials design, via a systems approach. The chapters in the book, written by the leading experts in their respective disciplines, cover a wide spectrum of topics ranging from stem cell biology, developmental biology, cell-matrix interactions, and matrix biology to surface science, materials processing and drug delivery. We hope the contents of the book will provoke the readership into developing regenerative medicine paradigms that combine these facets into clinically translatable solutions. This NATO meeting would not have been successful without the timely help of Dr. Ulrike Shastri, Sanjeet Rangarajan and Ms. Sabine Benner, who assisted in the organization and imple-

mentation of various elements of this meeting. Thanks are also due Dr. Fausto Pedrazzini and Ms. Alison Trapp at NATO HQ (Brussels, Belgium). The commitment and persistence of Ms.

Present Your Research to the World! The World Congress 2009 on Medical Physics and Biomedical Engineering - the triennial scientific meeting of the IUPESM - is the world's leading forum for presenting the results of current scientific work in health-related physics and technologies to an international audience. With more than 2,800 presentations it will be the biggest conference in the fields of Medical Physics and Biomedical Engineering in 2009! Medical physics, biomedical engineering and bioengineering have been driving forces of innovation and progress in medicine and healthcare over the past two decades. As new key technologies arise with significant potential to open new options in diagnostics and therapeutics, it is a multidisciplinary task to evaluate their benefit for medicine and healthcare with respect to the quality of performance and therapeutic output. Covering key aspects such as information and communication technologies, micro- and nanosystems, optics and biotechnology, the congress will serve as an inter- and multidisciplinary platform that brings together people from basic research, R&D, industry and medical application to discuss these issues. As a major event for science, medicine and technology the congress provides a comprehensive overview and in-depth, first-hand information on new developments, advanced technologies and current and future applications. With this Final Program we would like to give you an overview of the dimension of the congress and invite you to join us in Munich! Olaf Dössel Congress President Wolfgang C.

Focused on making reflection an integral part of the journey, this updated resource guides readers through the process of researching, writing, and defending a qualitative dissertation.

Although the majority of heart failure represents the exacerbation of chronic disease, about 20% will present as a first time diagnosis. And although there are a number of intravenous agents that can be used for acute decompensated heart failure, there are no national guidelines currently available. Edited by a well-known expert and his team of con

This two-volume set LNBI 10813 and LNBI 10814 constitutes the proceedings of the 6th International Work-Conference on Bioinformatics and Biomedical Engineering, IWBIO 2018, held in Granada, Spain, in April 2018. The 88 regular papers presented were carefully reviewed and selected from 273 submissions. The scope of the conference spans the following areas: bioinformatics for healthcare and diseases; bioinformatics tools to integrate omics dataset and address biological question; challenges and advances in measurement and self-parametrization of complex biological systems; computational genomics; computational proteomics; computational systems for modelling biological processes; drug delivery system design aided by mathematical modelling and experiments; generation, management and biological insights from big data; high-throughput bioinformatic tools for medical genomics; next generation sequencing and sequence analysis; interpretable models in biomedicine and bioinformatics; little-big data. Reducing the complexity and facing uncertainty of highly underdetermined phenotype prediction problems; biomedical engineering; biomedical image analysis; biomedical signal analysis; challenges in smart and wearable sensor design for mobile health; and healthcare and diseases.

Artificial Intelligence in Behavioral and Mental Health Care summarizes recent advances in artificial intelligence as it applies to mental health clinical practice. Each chapter provides a technical description of the advance, review of application in clinical practice, and empirical data on clinical efficacy. In addition, each chapter includes a discussion of practical issues in clinical settings, ethical considerations, and limitations of use. The book encompasses AI based advances in decision-making, in assessment and treatment, in providing education to clients, robot assisted task completion, and the use of AI for research and data gathering. This book will be of use to mental health practitioners interested in learning about, or incorporating AI advances into their practice and for researchers interested in a comprehensive review of these advances in one source. Summarizes AI advances for use in mental health practice Includes advances in AI based decision-making and consultation Describes AI applications for assessment and treatment Details AI advances in robots for clinical settings Provides empirical data on clinical efficacy Explores practical issues of use in clinical settings

The field of picture processing by computer is reviewed from a technique-oriented standpoint. Only the processing of given pictures (as opposed to computer-synthesized pictures) is considered. Specific areas covered include: (a) Pictures as information sources and their efficient encoding; (b) Approximation of pictures - sampling and quantization techniques; (c) Position-invariant operations on pictures and their implementation (digital, electro-optical, optical); applications to matched filtering (template matching), spatial frequency filtering and image restoration, measurement of image quality, and image enhancement ('smoothing' and 'sharpening'); (d) Picture properties (linear; local and 'textural'; random) useful for pictorial pattern recognition; (e) 'Figure extraction' from pictures; figure properties (topology, size, shape); (f) Picture description and 'picture languages.' (Author).

This updated edition of a widely popular text spotlights how doctors can better communicate with their patients and how patients can better communicate with their doctors.

Social psychology attempts to understand, explain, predict and, when needed, change people's thoughts, feelings and behaviours. For a relatively young discipline it has already made great strides toward this awe-inspiring goal. Pioneers such as Lewin, Asch, Kelley and Festinger began groundwork in the 1940s and 1950s, but it was only in the late 1960s that social psychology came of age. Since then it has blossomed, both in investigating the basics of the discipline and in applying the insights from fundamental social psychology to different fields related to the area. This volume is devoted to the development of understanding in the field of social psychology over the last four decades, focusing on both basic and applied social psychology. Contributions are gathered under five main areas: attitudes and attitude change; social cognition and emotions; interpersonal and group processes; health behavior; and bereavement and coping. These five domains not only illustrate the scope of social psychology, but also pay tribute to one of the key figures in modern social psychology, Wolfgang Stroebe. Remarkably, he has made significant contributions across all five of these areas, and his research achievements exemplify the progress, prospects and problems faced by modern social psychology over the last 40 years. This volume includes contributions from some of the most distinguished names in the field, and all authors provide an overview or critical look at their specific area of expertise, tracing historical developments where appropriate. The *Scope of Social Psychology* provides a broad-ranging, illustrative review of the field of modern social psychology.

Over the last ten years, much effort has been devoted to improving the biophysical techniques used in the study of viruses. This has resulted in the visualization of these large macromolecular assemblages at atomic level, thus providing the platform for functional interpretation and therapeutic design. *Structural Virology* covers a wide range of topics and is split into three sections. The first discusses the vast biophysical methodologies used in structural virology, including sample production and purification, confocal microscopy, mass spectrometry, negative-stain and cryo-electron microscopy, X-ray crystallography and nuclear magnetic resonance spectroscopy. The second discusses the role of virus capsid protein structures in determining the functional roles required for re-

ceptor recognition, cellular entry, capsid assembly, genome packaging and mechanisms of host immune system evasion. The last section discusses therapeutic strategies based on virus protein structures, including the design of antiviral drugs and the development of viral capsids as vehicles for foreign gene delivery. Each topic covered will begin with a review of the current literature followed by a more detailed discussion of experimental procedures, a step in the viral life cycle, or strategies for therapeutic development. With contributions from experts in the field of structural biology and virology this exceptional monograph will appeal to biomedical scientists involved in basic and /or applied research on viruses. It also provides up-to-date reference material for students entering the field of structural virology as well as scientists already familiar with the area.

The goal of this monograph is to develop the theory of wavelet harmonic analysis on the sphere. By starting with orthogonal polynomials and functional Hilbert spaces on the sphere, the foundations are laid for the study of spherical harmonics such as zonal functions. The book also discusses the construction of wavelet bases using special functions, especially Bessel, Hermite, Tchebychev, and Gegenbauer polynomials.

"With contributions from leading international researchers, this second edition of *Electrical Impedance Tomography: Methods, History and Applications* has been fully updated throughout and contains new developments in the field, including sections on image interpretation and image reconstruction. Providing a thorough review of the progress of EIT, the present state of knowledge, and a look at future advances and applications, this accessible reference will be invaluable for mathematicians, physicists dealing with bioimpedance, electronic engineers involved in developing and extending its applications, and clinicians wishing to take advantage of this powerful imaging method. Key Features: Fully updated throughout, with new sections on image interpretation and image reconstruction Overview of the current state of experimental and clinical use of EIT as well as active research developments Overview of related research in geophysics, industrial process tomography, magnetic-resonance and magnetic-induction impedance imaging"--

Written by internationally renowned leaders in their field and relevant to all practicing clinicians, this textbook comprehensively cov-

ers all aspects of heart failure, and suggests the optimal evidence-based management for heart failure patients.

This comprehensive resource provides readers with the tools necessary to perform analysis of various waveforms for use in radar systems. It provides information about how to produce synthetic aperture (SAR) images by giving a tomographic formulation and implementation for SAR imaging. Tracking filter fundamentals, and each parameter associated with the filter and how each affects tracking performance are also presented. Various radar cross section measurement techniques are covered, along with waveform selection analysis through the study of the ambiguity function for each particular waveform from simple linear frequency modulation (LFM) waveforms to more complicated coded waveforms. The text includes the Python tool suite, which allows the reader to analyze and predict radar performance for various scenarios and applications. Also provided are MATLAB® scripts corresponding to the Python tools. The software includes a user-friendly graphical user interface (GUI) that provides visualizations of the concepts being covered. Users have full access to both the Python and MATLAB source code to modify for their application. With examples using the tool suite are given at the end of each chapter, this text gives readers a clear understanding of how important target scattering is in areas of target detection, target tracking, pulse integration, and target discrimination.

What does innovation mean to and in India? What are the predominant areas of innovation for India, and under what situations do they succeed or fail? This book addresses these all-important questions arising within diverse Indian contexts: informal economy, low-cost settings, large business groups, entertainment and copyright-based industries, an evolving pharma sector, a poorly organized and appallingly underfunded public health system, social enterprises for the urban poor, and innovations for the millions. It explores the issues that promote and those that hinder the country's rise as an innovation leader. The book's balanced perspective on India's promises and failings makes it a valuable addition for those who believe that India's future banks heavily on its ability to leapfrog using innovation, as well as those sceptical of the Indian state's belief in the potential of private enterprise and innovation. It also provides critical insights on innovation in general, the most important of which being the highly context-specific, context-driven character of the innovation project.