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KEY=INFORMATICS - HANEY HOBBS

TRANSLATIONAL BIOMEDICAL INFORMATICS

A PRECISION MEDICINE PERSPECTIVE

Springer This book introduces readers to essential methods and applications in translational biomedical informatics, which include biomedical big data, cloud computing and algorithms for understanding omics data, imaging data, electronic health records and public health data. The storage, retrieval, mining and knowledge discovery of biomedical big data will be among the key challenges for future translational research. The paradigm for precision medicine and healthcare needs to integratively analyze not only the data at the same level – e.g. different omics data at the molecular level – but also data from different levels – the molecular, cellular, tissue, clinical and public health level. This book discusses the following major aspects: the structure of cross-level data; clinical patient information and its shareability; and standardization and privacy. It offers a valuable guide for all biologists, biomedical informaticians and clinicians with an interest in Precision Medicine Informatics.

TRANSLATIONAL INFORMATICS

REALIZING THE PROMISE OF KNOWLEDGE-DRIVEN HEALTHCARE

Springer Integrative and translational methodologies and frameworks have transformed modern biomedical research and the delivery of clinical care. This shift has been manifested in a number of ways, including the rapid growth and increasing availability of high-throughput bio-molecular instrumentation and analysis platforms, innovative clinical research programs intended to accelerate knowledge translation, and initial efforts to deliver personalized healthcare informed by the genomic profiles of patients. A common theme of reports and publications concerned with such transformative changes in the biomedical and healthcare domains is concerned with the challenges and opportunities related to the collection, management, integration, analysis, and dissemination of large-scale, heterogeneous biomedical data sets. In particular, the absence of well-established and adopted theoretical and practical frameworks intended to address such needs is a major impediment to the realization of translational and knowledge-driven healthcare, in which the best possible scientific evidence is used to inform the care of every patient. In this vacuum, the development of integrative clinical or translational research paradigms is significantly limited by the propagation of both data and expertise silos. This book details for the first time the current state of this extremely potent area of healthcare innovation and policy and defines the interaction between clinical/translational science and biomedical informatics.

BIOMEDICAL INFORMATICS IN TRANSLATIONAL RESEARCH

Artech House This trailblazing resource on biomedical informatics provides medical researchers with innovative techniques for integrating and federating data from clinical and molecular studies. This volume helps researchers manage data, expedite their efforts, and make the most of targeted basic research.

PEDIATRIC BIOMEDICAL INFORMATICS

COMPUTER APPLICATIONS IN PEDIATRIC RESEARCH

Springer The book describes the core resources in informatics necessary to support biomedical research programs and how these can best be integrated with hospital systems to receive clinical information that is necessary to conduct translational research. The focus is on the authors' recent practical experiences in establishing an informatics infrastructure in a large research-intensive children's hospital. This book is intended for translational researchers and informaticians in pediatrics, but can also serve as a guide to all institutions facing the challenges of developing and strengthening informatics support for biomedical research. The first section of the book discusses important technical challenges underlying computer-based pediatric research, while subsequent sections discuss informatics applications that support biobanking and a broad range of research programs. Pediatric Biomedical Informatics provides practical insights into the design, implementation, and utilization of informatics infrastructures to optimize care and research to benefit children.

TRANSLATIONAL INFORMATICS IN SMART HEALTHCARE

Springer This book is about the transformation of the biomedical information to smart healthcare, the chapters are designed to discuss the health associated factors such as genetics, lifestyle, nutrition and environmental factors. The interactions of these factors and the informatics for the analyses of their effects on health are also covered. The era of aging is approaching and the P4 (predictive, preventive, personalized and participatory) medicine paradigm is becoming practical and reality. According to the Kondratiev's long wave theory, IT (information technology) and health will be the next technological revolution for the new economic cycle. This book is written for biomedical informatics scientists, clinicians, health practitioners and researchers, etc.

TRANSLATIONAL BIOINFORMATICS IN HEALTHCARE AND MEDICINE

Academic Press Translational Bioinformatics in Healthcare and Medicine offers an overview of main principles of bioinformatics, biological databases, clinical informatics, health informatics, viroinformatics and real-case applications of translational bioinformatics in healthcare. Written by experts from both technology and clinical sides, the content brings together essential knowledge to make the best of recent advancements of the field. The book discusses topics such as next generation sequence analysis, genomics in clinical care, IoT applications, blockchain technology, patient centered interoperability of EHR, health data mining, and translational bioinformatics methods for drug discovery and drug repurposing. In addition, it discusses the role of bioinformatics in cancer research and viroinformatics approaches to counter viral diseases through informatics. This is a valuable resource for bioinformaticians, clinicians, healthcare professionals, graduate students and several members of biomedical field who are interested in learning more about how bioinformatics can impact in their research and practice. Covers recent advancements in translational bioinformatics and its healthcare applications Discusses integrative and multidisciplinary approaches to U-healthcare systems development and management Bridges the gap among various knowledge domains in the field, integrating both technological and clinical knowledge into practical content

PEDIATRIC BIOMEDICAL INFORMATICS

COMPUTER APPLICATIONS IN PEDIATRIC RESEARCH

Springer Advances in the biomedical sciences, especially genomics, proteomics, and metabolomics, taken together with the expanding use of electronic health records, are radically changing the IT infrastructure and software applications needed to support the transfer of knowledge from bench to bedside. Pediatric Biomedical Informatics: Computer Applications in Pediatric Research describes the core resources in informatics necessary to support biomedical research programs and how these can best be integrated with hospital systems to receive clinical information that is necessary to conduct translational research.The focus is on the authors' recent practical experiences in establishing an informatics infrastructure in a large research-intensive children's hospital. This book is intended for translational researchers and informaticians in pediatrics, but can also serve as a guide to all institutions facing the challenges of developing and strengthening informatics support for biomedical research. The first section of the book discusses important technical challenges underlying computer-based pediatric research, while subsequent sections discuss informatics applications that support biobanking and a broad range of research programs. Pediatric Biomedical Informatics provides practical insights into the design, implementation, and utilization of informatics infrastructures to optimize care and research to benefit children. Dr. John Hutton is the Vice President and Director of Biomedical Informatics at Cincinnati Children's Hospital Medical Center, Cincinnati, OH, USA. He is also Professor of Pediatrics and Associate Dean for Information Services at the University of Cincinnati College of Medicine.

TRANSLATIONAL BIOINFORMATICS AND ITS APPLICATION

Springer This book offers a detailed overview of translational bioinformatics together with real-case applications. Translational bioinformatics integrates the areas of basic bioinformatics, clinical informatics, statistical genetics and informatics in order to further our understanding of the molecular basis of diseases. By analyzing voluminous amounts of molecular and clinical data, it also provides clinical information, which can then be applied. Filling the gap between clinic research and informatics, the book is a valuable resource for human geneticists, clinicians, health educators and policy makers, as well as graduate students majoring in biology, biostatistics, and bioinformatics.

TRANSLATIONAL MEDICINE - WHAT, WHY AND HOW

AN INTERNATIONAL PERSPECTIVE

Karger Medical and Scientific Publishers This book is the first to provide an aerial view, as well as detailed information, on 'how' activities in translational medicine are under development in countries such as the USA, China, the UK, and Taiwan. Institutions in each country are training investigators to work as sophisticated interdisciplinary teams. Investigators from 11 US academic health centers explain how they are incentivizing collaborations through pilot project programs, forming partnerships with business schools to promote efficient management of basic and clinical research, creating ethical, high- value public-private (industry) partnerships, improving efficiency with utilization of informatics, and engaging the community in research. The essential role of evaluation is explained in a clear and concise manner. The readers will also learn about the role of private funding in Taiwan and the vision of the government in China in developing multiple translational research centers. The UK is developing methodical approaches to patient needs across their lifespans; ongoing innovation is encouraged through incubator programs. With the emphasis on open innovation and sharing, the concepts and practice of translational medicine are spreading rapidly on an international scale.

BIOINFORMATICS FOR DIAGNOSIS, PROGNOSIS AND TREATMENT OF COMPLEX DISEASES

Springer Science & Business Media The book introduces the bioinformatics tools, databases and strategies for the translational research, focuses on the biomarker discovery based on integrative data analysis and systems biological network reconstruction. With the coming of personal genomics era, the biomedical data will be accumulated fast and then it will become reality for the personalized and accurate diagnosis, prognosis and treatment of complex diseases. The book covers both state of the art of bioinformatics methodologies and the examples for the identification of simple or network biomarkers. In addition, bioinformatics software tools and scripts are provided to the practical application in the study of complex diseases. The present state, the future challenges and perspectives were discussed. The book is written for biologists, biomedical informatics scientists and clinicians, etc. Dr. Bairong Shen is Professor and Director of Center for Systems Biology, Soochow University; he is also Director of Taicang Center for Translational Bioinformatics.

BIOMEDICAL INFORMATICS

COMPUTER APPLICATIONS IN HEALTH CARE AND BIOMEDICINE

Springer Science & Business Media The practice of modern medicine and biomedical research requires sophisticated information technologies with which to manage patient information, plan diagnostic procedures, interpret laboratory results, and carry out investigations. Biomedical Informatics provides both a conceptual framework and a practical inspiration for this swiftly emerging scientific discipline at the intersection of computer science, decision science, information science, cognitive science, and biomedicine. Now revised and in its third edition, this text meets the growing demand by practitioners, researchers, and students for a comprehensive introduction to key topics in the field. Authored by leaders in medical informatics and extensively tested in their courses, the chapters in this volume constitute an effective textbook for students of medical informatics and its areas of application. The book is also a useful reference work for individual readers needing to understand the role that computers can play in the provision of clinical services and the pursuit of biological questions. The volume is organized so as first to explain basic concepts and then to illustrate them with specific systems and technologies.

CLINICAL RESEARCH INFORMATICS

Springer Science & Business Media The purpose of the book is to provide an overview of clinical research (types), activities, and areas where informatics and IT could fit into various activities and business practices. This book will introduce and apply informatics concepts only as they have particular relevance to clinical research settings.

METHODS IN BIOMEDICAL INFORMATICS

A PRAGMATIC APPROACH

Academic Press Beginning with a survey of fundamental concepts associated with data integration, knowledge representation, and hypothesis generation from heterogeneous data sets, Methods in Biomedical Informatics provides a practical survey of methodologies used in biological, clinical, and public health contexts. These concepts provide the foundation for more advanced topics like information retrieval, natural language processing, Bayesian modeling, and learning classifier systems. The survey of topics then concludes with an exposition of essential methods associated with engineering, personalized medicine, and linking of genomic and clinical data. Within an overall context of the scientific method, Methods in Biomedical Informatics provides a practical coverage of topics that is specifically designed for: (1) domain experts seeking an understanding of biomedical informatics approaches for addressing specific methodological needs; or (2) biomedical informaticians seeking an approachable overview of methodologies that can be used in scenarios germane to biomedical research. Contributors represent leading biomedical informatics experts: individuals who have demonstrated effective use of biomedical informatics methodologies in the real-world, high-quality biomedical applications Material is presented as a balance between foundational coverage of core topics in biomedical informatics with practical "in-the-trenches" scenarios. Contains appendices that function as primers on: (1) Unix; (2) Ruby; (3) Databases; and (4) Web Services.

MENTAL HEALTH INFORMATICS

ENABLING A LEARNING MENTAL HEALTHCARE SYSTEM

Springer Nature This textbook provides a detailed resource introducing the subdiscipline of mental health informatics. It systematically reviews the methods, paradigms, tools and knowledge base in both clinical and bioinformatics and across the spectrum from research to clinical care. Key foundational technologies, such as terminologies, ontologies and data exchange standards are presented and given context within the complex landscape of mental health conditions, research and care. The learning health system model is utilized to emphasize the bi-directional nature of the translational science associated with mental health processes. Descriptions of the data, technologies, paradigms and products that are generated by and used in each process and their limitations are discussed. Mental Health Informatics: Enabling a Learning Mental Healthcare System is a comprehensive introductory resource for students, educators and researchers in mental health informatics and related behavioral sciences. It is an ideal resource for use in a survey course for both pre- and post-doctoral training programs, as well as for healthcare administrators, funding entities, vendors and product developers working to make mental healthcare more evidence-based.

TRANSLATIONAL BIOINFORMATICS APPLICATIONS IN HEALTHCARE

CRC Press Translational bioinformatics (TBI) involves development of storage, analytics, and advanced computational methods to harvest knowledge from voluminous biomedical and genomic data into 4P healthcare (proactive, predictive, preventive, and participatory). Translational Bioinformatics Applications in Healthcare offers a detailed overview on concepts of TBI, biological and clinical databases, clinical informatics, and pertinent real-case applications. It further illustrates recent advancements, tools, techniques, and applications of TBI in healthcare, including Internet of Things (IoT) potential, toxin databases, medical image analysis and telemedicine applications, analytics of COVID-19 CT images, viroinformatics and viral diseases, and COVID-19–related research. Covers recent technologies such as Blockchain, IoT, and Big data analytics in bioinformatics Presents the role of translational bioinformatic methods in the field of viroinformatics, as well as in drug development and repurposing Includes translational healthcare and NGS for clinical applications Illustrates translational medicine systems and their applications in better healthcare Explores medical image analysis with focus on CT images and novel coronavirus disease detection Aimed at researchers and graduate students in computational biology, data mining and knowledge discovery, algorithms and complexity, and interdisciplinary fields of studies, including bioinformatics, health-informatics, biostatistics, biomedical engineering, and viroinformatics. Khalid Raza is an Assistant Professor, the Department of Computer Science, Jamia Millia Islamia (Central University), New Delhi. His research interests include translational bioinformatics, computational intelligence methods and its applications in bioinformatics, viroinformatics, and health informatics. Nilanjan Dey is an Associate Professor, the Department of Computer Science and Engineering, JIS University, Kolkata, India. His research interests include medical imaging, machine learning, computer-aided diagnosis, and data mining.

MEDICAL IMAGING INFORMATICS

Springer Science & Business Media Medical Imaging Informatics provides an overview of this growing discipline, which stems from an intersection of biomedical informatics, medical imaging, computer science and medicine. Supporting two complementary views, this volume explores the fundamental technologies and algorithms that comprise this field, as well as the application of medical imaging informatics to subsequently improve healthcare research. Clearly written in a four part structure, this introduction follows natural healthcare processes, illustrating the roles of data collection and standardization, context extraction and modeling, and medical decision making tools and applications. Medical Imaging Informatics identifies core concepts within the field, explores research challenges that drive development, and includes current state-of-the-art methods and strategies.

MEDICAL INFORMATICS, E-HEALTH

FUNDAMENTALS AND APPLICATIONS

Springer Science & Business Media Over the years, medical informatics has matured into a true scientific discipline. Fundamental and applied aspects are now taught in various fields of health, including medicine, dentistry, pharmacy, nursing and public health. Medical informatics is also often included in the curricula of many other disciplines, including the life sciences, engineering and economics. Medical informatics is a complex and rapidly changing discipline. Relatively few books have been published on the subject, and they rapidly become obsolete. This book is the fruit of a collaborative effort between authors teaching medical informatics in France and others who are conducting research in this field. In addition, an international perspective was pursued, as reflected in the inclusion of various developments and actions in both the USA and Europe. This book is divided into 18 chapters, all of which include learning objectives, recommendations for further reading, exercises and bibliographic references.

BIOMEDICAL INFORMATICS

COMPUTER APPLICATIONS IN HEALTH CARE AND BIOMEDICINE

Springer Nature This 5th edition of this essential textbook continues to meet the growing demand of practitioners, researchers, educators, and students for a comprehensive introduction to key topics in biomedical informatics and the underlying scientific issues that sit at the intersection of biomedical science, patient care, public health and information technology (IT). Emphasizing the conceptual basis of the field rather than technical details, it provides the tools for study required for readers to comprehend, assess, and utilize biomedical informatics and health IT. It focuses on practical examples, a guide to additional literature, chapter summaries and a comprehensive glossary with concise definitions of recurring terms for self-study or classroom use. Biomedical Informatics: Computer Applications in Health Care and Biomedicine reflects the remarkable changes in both computing and health care that continue to occur and the exploding interest in the role that IT must play in care coordination and the melding of genomics with innovations in clinical practice and treatment. New and heavily revised chapters have been introduced on human-computer interaction, mHealth, personal health informatics and precision medicine, while the structure of the other chapters has undergone extensive revisions to reflect the developments in the area. The organization and philosophy remain unchanged, focusing on the science of information and knowledge management, and the role of computers and communications in modern biomedical research, health and health care.

INFORMATICS EDUCATION IN HEALTHCARE

LESSONS LEARNED

Springer Science & Business Media This book reviews and defines the current state of the art for informatics education in medicine and health care. This field has undergone considerable change as the field of informatics itself has evolved. Twenty years ago almost the only individuals involved in health care who had even heard the term “informatics” were those who identified themselves as medical or nursing informaticians. Today, we have a variety of subfields of informatics including not just medical and nursing informatics, but informatics applied to specific health professions (such as dental or pharmacy informatics), as well as biomedical informatics, bioinformatics and public health informatics. The book addresses the broad range of informatics education programs available today. The Editor and experienced internationally recognized informatics educators who have contributed to this work have made the tacit knowledge explicit and shared some of the lessons they have learned. This book therefore represents the key reference for all involved in the informatics education whether they be trainers or trainees.

MEDINFO 2017: PRECISION HEALTHCARE THROUGH INFORMATICS

PROCEEDINGS OF THE 16TH WORLD CONGRESS ON MEDICAL AND HEALTH INFORMATICS

IOS Press Medical informatics is a field which continues to evolve with developments and improvements in foundational methods, applications, and technology, constantly offering opportunities for supporting the customization of healthcare to individual patients. This book presents the proceedings of the 16th World Congress of Medical and Health Informatics (MedInfo2017), held in Hangzhou, China, in August 2017, which also marked the 50th anniversary of the International Medical Informatics Association (IMIA). The central theme of MedInfo2017 was "Precision Healthcare through Informatics", and the scientific program was divided into five tracks: connected and digital health; human data science; human, organizational, and social aspects; knowledge management and quality; and safety and patient outcomes. The 249 accepted papers and 168 posters included here span the breadth and depth of sub-disciplines in biomedical and health informatics, such as clinical informatics; nursing informatics; consumer health informatics; public health informatics; human factors in healthcare; bioinformatics; translational informatics; quality and safety; research at the intersection of biomedical and health informatics; and precision medicine. The book will be of interest to all those who wish to keep pace with advances in the science, education, and practice of biomedical and health informatics worldwide.

TRANSLATIONAL BIOINFORMATICS AND SYSTEMS BIOLOGY METHODS FOR PERSONALIZED MEDICINE

Academic Press Translational Bioinformatics and Systems Biology Methods for Personalized Medicine introduces integrative approaches in translational bioinformatics and systems biology to support the practice of personalized, precision, predictive, preventive, and participatory medicine. Through the description of important cutting-edge technologies in bioinformatics and systems biology, readers may gain an essential understanding of state-of-the-art methodologies. The book discusses topics such as the challenges and tasks in translational bioinformatics; pharmacogenomics, systems biology, and personalized medicine; and the applicability of translational bioinformatics for biomarker discovery, epigenomics, and molecular dynamics. It also discusses data integration and mining, immunoinformatics, and neuroinformatics. With broad coverage of both basic scientific and clinical applications, this book is suitable for a wide range of readers who may not be scientists but who are also interested in the practice of personalized medicine. Introduces integrative approaches in translational bioinformatics and systems biology to support the practice of personalized, precision, predictive, preventive, and participatory medicine Presents a problem-solving oriented methodology to deal with practical problems in various applications Covers both basic scientific and clinical applications in order to enhance the collaboration between researchers and clinicians Brings integrative and multidisciplinary approaches to bridge the gaps among various knowledge domains in the field

PATHOLOGY INFORMATICS, AN ISSUE OF SURGICAL PATHOLOGY CLINICS, E-BOOK

Elsevier Health Sciences This issue of Surgical Pathology Clinics takes a departure from its presentation of Differential Diagnosis, Histopathology, Staging, and Prognosis of tumors in different anatomic sites. This special issue is devoted to topics in pathology informatics as they relate to the practice of surgical pathology. Topics include: Basics of Information Systems (Hardware, Software); Networks, Interfaces and Communications; Databases; Data Representation, Coding and Communication Standards; Laboratory Information Systems; Enhancing and Customizing Laboratory Information Systems to Improve/Enhance Pathologist Workflow; Laboratory Management and Operations; Specialized Laboratory Information Systems; Middleware and Laboratory Automation; Synoptic Reporting in Anatomical Pathology; Bar Coding and Tracking; Molecular Pathology Informatics; Informatics and Autopsy Pathology; Pathology Informatics and Project Management; Digital Imaging Basics; Use of Digital Images in Clinical Practice; Whole Slide Imaging; Telepathology; Mobile Technologies for the Surgical Pathologist; Image Analysis; Advanced Imaging Techniques; Healthcare Information Systems; Data Security and Reliability; Role of Informatics in Patient Safety and Quality Assurance; Role of Pathology Informatics in IT Leadership; Selection and Implementation of New Information Systems; Biomedical Informatics and Research Informatics; Training in Pathology Informatics; and Building Tools for the Surgical Pathologist: Next Generation Pathologist. Editor of this issue, Dr Anil Parwani, is Professor of Pathology and Biomedical Informatics and Director of Division of Pathology Informatics. Dr. Parwani is well known as expert in the area of Anatomical Pathology Informatics, which includes design of quality assurance tools, tissue banking informatics, clinical and research data integration and mining, synoptic reporting in anatomical pathology, clinical applications of whole slide imaging, digital imaging, telepathology, image analysis and lab automation and workflow processes, such as barcoding and voice recognition.

WIKIPEDIA HANDBOOK OF BIOMEDICAL INFORMATICS

PediaPress

INFORMATICS NEEDS AND CHALLENGES IN CANCER RESEARCH

WORKSHOP SUMMARY

National Academies Press As information technology becomes an integral part of health care, it is important to collect and analyze data in a way that makes the information understandable and useful. Informatics tools--which help collect, organize, and analyze data--are essential to biomedical and health research and development. The field of cancer research is facing an overwhelming deluge of data, heightening the national urgency to find solutions to support and sustain the cancer informatics ecosystem. There is a particular need to integrate research and clinical data to facilitate personalized medicine approaches to cancer prevention and treatment--for example, tailoring treatment based on an individual patient's genetic makeup as well as that of the tumor --and to allow for more rapid learning from patient experiences. To further examine informatics needs and challenges for 21st century biomedical research, the IOM's National Cancer Policy Forum held a workshop February 27-28, 2012. The workshop was designed to raise awareness of the critical and urgent importance of the challenges, gaps and opportunities in informatics; to frame the issues surrounding the development of an integrated system of cancer informatics for acceleration of research; and to discuss solutions for transformation of the cancer informatics enterprise. Informatics Needs and Challenges in Cancer Research: Workshop Summary summarizes the workshop.

TRANSLATING EXPERTISE

THE LIBRARIAN'S ROLE IN TRANSLATIONAL RESEARCH

Rowman & Littlefield Translating Expertise: The Librarian’s Role in Translational Research provides background and context on the CTSA program. Case studies detail routes to librarian involvement in translational research, including collection development, relationships with researchers and administrators, instruction and training, data management, and team science.

PATHOLOGY INFORMATICS

AN ISSUE OF THE CLINICS IN LABORATORY MEDICINE

Elsevier Health Sciences This issue of the Clinics in Laboratory Medicine, edited by Dr. Anil Parwani, is a special issue is devoted to topics in Pathology Informatics. Topics include but are not limited to: Basics of Information Systems (Hardware, Software); Networks, Interfaces and Communications; Databases; Data Representation, Coding and Communication Standards; Laboratory Information Systems; Enhancing and Customizing Laboratory Information Systems; Laboratory Management and Operations; Specialized Laboratory Information Systems; Middleware and Laboratory Automation; Bar Coding and Tracking; Molecular Pathology Informatics; Pathology Informatics and Project Management; Digital Imaging; Telepathology; Healthcare Information Systems; Data Security and Reliability; Role of Informatics in Patient Safety and Quality Assurance; Role of Pathology Informatics in IT Leadership; Selection and Implementation of New Information Systems; Biomedical Informatics and Research Informatics; Training in Pathology Informatics; and more.

JAVA FOR BIOINFORMATICS AND BIOMEDICAL APPLICATIONS

Springer Science & Business Media Medical science and practice have undergone fundamental changes in the last 5 years, as large-scale genome projects have resulted in the sequencing of a number of important microbial, plant and animal genomes. This book aims to combine industry standard software engineering and design principles with genomics, bioinformatics and cancer research. Rather than an exercise in learning a programming platform, the text focuses on useful analytical tools for the scientific community.

ICT FOR HEALTH SCIENCE RESEARCH

PROCEEDINGS OF THE EFMI 2019 SPECIAL TOPIC CONFERENCE

IOS Press Information and Communications Technology (ICT) is used in healthcare and health science research in application domains such as clinical trials and the development of drug and medical devices, as well as in translational medicine, with the aim of improving prevention, diagnosis, and interventions in health and care. This book presents accepted

papers from the 2019 European Federation of Medical Informatics conference (EFMI STC 2019), held in Hanover, Germany, from 7 – 10 April 2019. More than 90 submissions were received, from which, after review, the Scientific Program Committee (SPC) accepted 50 full papers to be included in this volume of proceedings. In addition, 16 poster presentations were accepted. This year, ICT for Health Science Research was selected as the focus topic, and the conference also honors Prof. Peter Leo Reichertz (1930 – 1987), one of the founding fathers of ICT healthcare and an originator of the term Medical Informatics. The conference focuses on recent research & development supporting information systems in biomedical, translational and clinical research, as well as semantic interoperability across such systems for the purpose of data sharing and the analytics of cross-system integrated data. Papers are divided into 12 categories covering topics including digitization; data privacy; interoperability; data-driven decision support; mobile data capture; and ICT for clinical trials. The book will be of interest to all healthcare researchers and practitioners whose work involves the use of ICT.

STREAMLINING REDCAP(TM) ACCESS WORKFLOW AT THE BIOMEDICAL INFORMATICS DEPARTMENT IN THE CLINICAL AND TRANSLATIONAL SCIENCE CENTER AT THE UNIVERSITY OF CALIFORNIA, DAVIS

With the rapid innovations in technology and their use in the field of clinical and translational research, streamlined workflows within different departments are necessary to achieve the fundamental goals of finding better disease treatment options and improved patient care. Workflows need to be efficient enough where minimal hindrances are presented to researchers in performing their tasks. This thesis will present a workflow redesign within the Biomedical Informatics Department at the University of California, Davis Health System which would reduce the steps involved in getting the clinical researchers' access to the Research Electronic Data Capture (REDCap(TM)) application for building research study databases. With a combination of advanced REDCap features and programming using the PHP Hypertext Preprocessor (PHP) language, an online REDCap access request application is prototyped which will serve as a central source for researchers in requesting access to REDCap. The proposed web-based application and the workflow changes in this thesis will significantly improve the processes involved in terms of time, labor, and resources.

ENCYCLOPEDIA OF BIOINFORMATICS AND COMPUTATIONAL BIOLOGY

ABC OF BIOINFORMATICS

Elsevier Encyclopedia of Bioinformatics and Computational Biology: ABC of Bioinformatics combines elements of computer science, information technology, mathematics, statistics and biotechnology, providing the methodology and in silico solutions to mine biological data and processes. The book covers Theory, Topics and Applications, with a special focus on Integrative –omics and Systems Biology. The theoretical, methodological underpinnings of BCB, including phylogeny are covered, as are more current areas of focus, such as translational bioinformatics, cheminformatics, and environmental informatics. Finally, Applications provide guidance for commonly asked questions. This major reference work spans basic and cutting-edge methodologies authored by leaders in the field, providing an invaluable resource for students, scientists, professionals in research institutes, and a broad swath of researchers in biotechnology and the biomedical and pharmaceutical industries. Brings together information from computer science, information technology, mathematics, statistics and biotechnology Written and reviewed by leading experts in the field, providing a unique and authoritative resource Focuses on the main theoretical and methodological concepts before expanding on specific topics and applications Includes interactive images, multimedia tools and crosslinking to further resources and databases

PEDIATRIC BIOMEDICAL INFORMATICS

COMPUTER APPLICATIONS IN PEDIATRIC RESEARCH

Springer Science & Business Media Advances in the biomedical sciences, especially genomics, proteomics, and metabolomics, taken together with the expanding use of electronic health records, are radically changing the IT infrastructure and software applications needed to support the transfer of knowledge from bench to bedside. Pediatric Biomedical Informatics: Computer Applications in Pediatric Research describes the core resources in informatics necessary to support biomedical research programs and how these can best be integrated with hospital systems to receive clinical information that is necessary to conduct translational research.The focus is on the authors' recent practical experiences in establishing an informatics infrastructure in a large research-intensive children's hospital. This book is intended for translational researchers and informaticians in pediatrics, but can also serve as a guide to all institutions facing the challenges of developing and strengthening informatics support for biomedical research. The first section of the book discusses important technical challenges underlying computer-based pediatric research, while subsequent sections discuss informatics applications that support biobanking and a broad range of research programs. Pediatric Biomedical Informatics provides practical insights into the design, implementation, and utilization of informatics infrastructures to

optimize care and research to benefit children. Dr. John Hutton is the Vice President and Director of Biomedical Informatics at Cincinnati Children's Hospital Medical Center, Cincinnati, OH, USA. He is also Professor of Pediatrics and Associate Dean for Information Services at the University of Cincinnati College of Medicine.

APPLICATION OF CLINICAL BIOINFORMATICS

Springer This book elucidates how genetic, biological and medical information can be applied to the development of personalized healthcare, medication and therapies. Focusing on aspects of the development of evidence-based approaches in bioinformatics and computational medicine, including data integration, methodologies, tools and models for clinical and translational medicine, it offers an essential introduction to clinical bioinformatics for clinical researchers and physicians, medical students and teachers, and scientists working with human disease-based omics and bioinformatics. Dr. Xiangdong Wang is a distinguished Professor of Medicine. He is Director of Shanghai Institute of Clinical Bioinformatics, Director of Fudan University Center for Clinical Bioinformatics, Deputy Director of Shanghai Respiratory Research Institute, Director of Biomedical Research Center, Fudan University Zhongshan Hospital, Shanghai, China; Dr. Christian Baumgartner is a Professor of Health Care and Biomedical Engineering at Institute of Health Care Engineering with European Notified Body of Medical Devices, Graz University of Technology, Graz, Austria; Dr. Denis Shields is a Professor of Clinical Bioinformatics at Conway Institute, Belfield, Dublin, Ireland; Dr. Hong-Wen Deng is a Professor at Department of Biostatistics and Bioinformatics, Tulane University School of Public Health and Tropical Medicine, USA; Dr. Jacques S Beckmann is a Professor and Director of Section of Clinical Bioinformatics, Swiss Institute of Bioinformatics, Switzerland.

MEDINFO 2015: EHEALTH-ENABLED HEALTH

PROCEEDINGS OF THE 15TH WORLD CONGRESS ON HEALTH AND BIOMEDICAL INFORMATICS

IOS Press Health and Biomedical Informatics is a rapidly evolving multidisciplinary field; one in which new developments may prove crucial in meeting the challenge of providing cost-effective, patient-centered healthcare worldwide. This book presents the proceedings of MEDINFO 2015, held in São Paulo, Brazil, in August 2015. The theme of this conference is 'eHealth-enabled Health', and the broad spectrum of topics covered ranges from emerging methodologies to successful implementations of innovative applications, integration and evaluation of eHealth systems and solutions. Included here are 178 full papers and 248 poster abstracts, selected after a rigorous review process from nearly 800 submissions by 2,500 authors from 59 countries. The conference brings together researchers, clinicians, technologists and managers from all over the world to share their experiences on the use of information methods, systems and technologies to promote patient-centered care, improving patient safety, enhancing care outcomes, facilitating translational research and enabling precision medicine, as well as advancing education and skills in Health and Biomedical Informatics. This comprehensive overview of Health and Biomedical Informatics will be of interest to all those involved in designing, commissioning and providing healthcare, wherever they may be.

HEALTH INFORMATICS

AN INTERPROFESSIONAL APPROACH

Elsevier Health Sciences Covering a range of skills and systems, this title prepares you for work in technology-filled clinical field. It includes topics such as clinical decision support, clinical documentation, provider order entry systems, system implementation, adoption issues, and more.

MENTAL HEALTH INFORMATICS

Oxford University Press Mental Health Informatics offers a comprehensive examination of contemporary issues in mental health that focuses on the innovative use of computers and other information technology in support of patient care, education, services delivery, and research in the field of mental health services. This text deals with resources, devices, and formalized methods for optimizing the storage, retrieval, and management of information for problem solving and decision-making in mental health. Mental health informatics is an interdisciplinary field based upon computer and information sciences, the cognitive and decision sciences, public health and mental health (including epidemiology), and telecommunications. Researchers in informatics have discovered new methods and techniques to enhance health and mental health care, scientific and applied research, and education through information technology. The fourteen chapters are divided into four main parts, including: 1) an introduction to informatics, public health, and mental health; 2) an overview of the ethical, legal, services delivery, and organizational issues in data/records standards and technology adoption; 3) discusses research in today's online environment, addressing issues including research competencies, standards for literature reviews, constructing search strategies, and synthesizing findings; and 4) provides a

discussion of the globalization of information and future issues in policy and practice in mental health informatics.

LOST IN TRANSLATION

BARRIERS TO INCENTIVES FOR TRANSLATIONAL RESEARCH IN MEDICAL SCIENCES

World Scientific This book is all about the definition and finding ways to prioritize and accelerate translation research in biomedical sciences and rapidly turning new knowledge into first-in-human studies. It represents an effort to bring together scientists active in various areas of translational research to share science and, hopefully, generate new ideas and potential collaborations. The book provides a comprehensive overview of translational work that includes significant discoveries and pioneering contributions, e.g., in immunology, gene therapy, stem cells and population sciences. It may be used as an advanced textbook by graduate students and even ambitious undergraduates in biomedical sciences. It is also suitable for non-experts, i.e. medical doctors, who wish to have an overview of some of the fundamental models in translational research. Managing the translational enterprise remains a work in progress. The world is changing rapidly, and the scientific world needs to seek new ways to ensure that discoveries get translated for patients efficiently and as quickly as possible. In addition, everyone expects the investment in biomedical research should pay dividends through effective therapeutic solutions. This unique project provides a broad collaborative approach of the international scientific team to present its view and opinion how to cross barriers to incentives for translational research in medical sciences. Contributing to the book is an international team of prominent co-authors. The book consists of unique and widely treated topics, and includes new hypotheses, data and analyses. Contents:Barriers to Incentives for Translational ResearchIntegrating Emerging Science into Clinical PracticeOrganization, Prioritization, Review and Funding for the Translational ResearchTranslational Sciences in Cancer ResearchTranslational Science in Infectious DiseasesTranslation Research in Endocrinology and NutritionTranslation Research and NeuroscienceStem Cells and Translation ResearchThe Role of Translational Research in Public Health and Behavioral SciencesTranslational Epidemiology, Biostatistics and InformaticsTranslational Research Outcomes and Resources Readership: Graduate students and researchers in cancer research, pharmacology/drug discovery/pharmaceuticals, immunology, infectious diseases and public health. Keywords:Translational Research;Basic and Clinical Sciences;Prevention;Population SciencesKey Features:International team of prominent co-authorsUnique and widely treated topicsNew hypotheses, data and analyses

CLINICAL RESEARCH INFORMATICS

Springer Science & Business Media The purpose of the book is to provide an overview of clinical research (types), activities, and areas where informatics and IT could fit into various activities and business practices. This book will introduce and apply informatics concepts only as they have particular relevance to clinical research settings.

INFORMATICS FOR HEALTH PROFESSIONALS

Jones & Bartlett Learning Informatics for Health Professionals is an excellent resource to provide healthcare students and professionals with the foundational knowledge to integrate informatics principles into practice.

HEALTH INFORMATICS MEETS EHEALTH

PREDICTIVE MODELING IN HEALTHCARE – FROM PREDICTION TO PREVENTION. PROCEEDINGS OF THE 10TH EHEALTH2016 CONFERENCE

IOS Press Progress in medicine has traditionally relied heavily on classical research pathways involving randomized clinical trials (RCTs) to establish reliable evidence for any given therapeutic intervention. However, not only are RCTs lengthy and expensive, they have a number of other disadvantages, including the fact that they are currently failing to keep pace with the number of potential innovative treatment options being developed, particularly in areas such as rare diseases. With the vast amount of data increasingly available for use in profiling patient characteristics and establishing correlations between outcomes and potential predictors, predictive modeling may offer a potential solution to the limitations of RCTs. This book presents the proceedings of the 2016 Health Informatics meets eHealth conference, held in Vienna, Austria in May 2016. The conference provides a platform for researchers, practitioners, decision makers and vendors to discuss innovative health informatics and eHealth solutions with a view to improving the quality, efficacy and efficiency of healthcare. The theme of the conference is Predictive Modeling in Healthcare. Covering subjects as diverse as fall-detection in the elderly, diabetes, physiotherapy and pediatric oncology, this book will be of interest to all those working in the field of (e)healthcare and its delivery.

TRANSLATIONAL INFORMATICS

SPORTS AND EXERCISE MEDICINE

Springer The book provides readers the informatics and data-driven models for the discovery of personalized excise prescriptions applied to different cases. Overdiagnosis or over-treatment often happened since the complex interaction among the lifestyle, genetic, and environmental factors. Sports and exercise are reported efficient to prevent or reduce the risk of diseases, but the interactions between sports/exercise and disease are personalized and complex. Translational informatics is a powerful paradigm and it promotes the transfer of big data, knowledge and models to the precision application of sports to prevent diseases. Sports and exercise may have different effects on diverse diseases including cancers, neurodegenerative disease, and cardiovascular diseases, etc. This book covers many modern informatics models such as ontologies, knowledge graphs, blockchain, participatory medicine, semantic artificial intelligence, big data modeling, and so on. It also describes the challenges for the sports and exercise medical data sharing and standardization, the privacy protection of data as well as the integration of data from genomic level to physiological phenotype level. This book will be helpful to the readers who are interesting in sports and exercise medicine, healthcare, big data modeling, artificial intelligence in medicine and healthcare.