Table of Contents

Preface ........................................................................................................................................... xxvii
Acknowledgment .......................................................................................................................... xxviii

Section I
Medical Data and Health Information Systems

Chapter I
Medical Informatics: Thirty Six Peer-Reviewed Shades ................................................................. 1
Sanjay P. Sood, C-DAC School of Advanced Computing, Mauritius
Sandhya Keeroo, C-DAC School of Advanced Computing, Mauritius
Victor W.A. Mbarika, Southern University, USA & A&M College, USA
Nupur Prakash, Guru Gobind Singh Indraprastha University, India
Ankur Seth, Adobe Systems, India

Chapter II
Medical Privacy and the Internet .................................................................................................... 17
D. John Doyle, Cleveland Clinic Foundation, USA

Chapter III
Security of Electronic Medical Records .......................................................................................... 30
Ana Ferreira, University of Kent, UK & LIACC, University of Porto, Portugal
Ricardo Cruz-Correia, CINTESIS, Portugal & University of Porto, Portugal
Luis Antunes, LIACC, University of Porto, Portugal
David Chadwick, University of Kent, UK

Section II
Standardization and Classification Systems in Medicine

Chapter IV
The Cultural History of Medical Classifications .............................................................................. 48
György Surján, National Institute for Strategic Health Research, Hungary
Chapter V
Overview and Analysis of Electronic Health Record Standards .......................................................... 84
Spyros Kitsiou, University of Macedonia Economic and Social Science, Greece
Vicky Manthou, University of Macedonia Economic and Social Science, Greece
Maro Vlachopoulou, University of Macedonia Economic and Social Science, Greece

Section III
Distributed E-Health Communication Systems and Applications

Chapter VI
The Integrative Model of E-Health Use ............................................................................................... 104
Graham D. Bodie, Louisiana State University, USA
Mohan J. Dutta, Purdue University, USA
Ambar Basu, University of South Florida, USA

Chapter VII
A Distributed E-Healthcare System .................................................................................................. 117
Firat Kart, University of California, Santa Barbara, USA
Gengxin Miao, University of California, Santa Barbara, USA
L. E. Moser, University of California, Santa Barbara, USA
P. M. Melliar-Smith, University of California, Santa Barbara, USA

Chapter VIII
Telepsychiatry Within European E-Health .......................................................................................... 129
Davor Mucic, Psychiatric Centre Little Prince, Denmark

Chapter IX
Pitfalls and Successes of a Web-Based Wellness Program ............................................................... 137
Azizah Omar, Universiti Sains Malaysia, Malaysia

Chapter X
A Web-Based Application to Exchange Electronic Health Records and Medical Images in Ophthalmology ................................................................................................................................. 152
Isabel de la Torre Diez, University of Valladolid, Spain
Roberto Hornero Sánchez, University of Valladolid, Spain
Miguel López Coronado, University of Valladolid, Spain
Jesús Poza Crespo, University of Valladolid, Spain
María Isabel López Gálvez, University of Valladolid, Spain

Chapter XI
Clinical and Biomolecular Ontologies for E-Health ........................................................................ 165
Mario Ceresa, Politecnico di Milano, Italy
Marco Masseroli, Politecnico di Milano, Italy
Chapter XII
Distributed Medical Volume Registration................................................................. 180
  Roger Tait, Nottingham Trent University, UK
  Gerald Schaefer, Aston University, UK

Chapter XIII
Electronic Commerce for Health Products Services—Problems—Quality and Future ........ 190
  Bill Ag. Drougas, HATRLab, Greece & Higher Technological Institute of Epirus, Greece

Chapter XIV
Distributed Knowledge Management in Healthcare.................................................. 198
  Christos Bountis, Oxford Radcliffe Hospitals, UK

Section IV
Wireless Telemedicine and Communications Technologies in Healthcare

Chapter XV
An Analysis of a Successful Emergency Telemedicine Venture .................................... 215
  Jelena Vucetic, Alpha Mission, Inc., USA

Chapter XVI
Reconfigurable Embedded Medical Systems............................................................. 228
  Tammara Massey, University of California, USA
  Foad Dabiri, University of California, USA
  Roozbeh Jafari, University of Texas, USA
  Hyduke Noshadi, University of California, USA
  Philip Brisk, Ecole Polytechnique Federale de Lausanne, Switzerland
  Majid Sarrafzadeh, University of California, USA

Chapter XVII
Third Generation (3G) Cellular Networks in Telemedicine: Technological Overview,
Applications and Limitations ...................................................................................... 241
  Konstantinos Perakis, National Technical University of Athens, Greece
  Dimitris Koutsouris, National Technical University of Athens, Greece

Chapter XVIII
Telemedicine Consultations in Daily Clinical Practice: Systems, Organisation, Efficiency .... 260
  Anton V. Vladzymyrskyy, Association for Ukrainian Telemedicine and eHealth Development &
  Donetsk R&D Institute of Traumatology and Orthopedics, Ukraine

Chapter XIX
Ubiquitous Healthcare: Radio Frequency Identification (RFID) in Hospitals..................... 273
  Cheon-Pyo Lee, Carson-Newman College, USA
  J. P. Shim, Mississippi State University, USA
Section V
Mobile Health Applications and New Home Care Telecare Systems

Chapter XX
Agile Patient Care with Distributed M-Health Applications ......................................................... 282
Rafael Capilla, Universidad Rey Juan Carlos, Spain
Alfonso del Río, Universidad Rey Juan Carlos, Spain
Miguel Ángel Valero, Universidad Politécnica de Madrid, Spain
José Antonio Sánchez, Universidad Politécnica de Madrid, Spain

Chapter XXI
Mobile Health Applications and New Home Care Telecare Systems: Critical Engineering Issues ... 305
Žilbert Tafa, University of Montenegro, Montenegro

Section VI
Distributed Problem-Solving Environments and Medical Imaging

Chapter XXII
A New System for the Integration of Medical Imaging Processing Algorithms
into a Web Environment .................................................................................................................. 325
José Antonio Seoane Fernández, Artificial Neural Networks and Adapative Systems Group &
University of Corunna, Spain
Juan Luis Pérez Ordóñez, Center of Medical Informatics and Radiological Diagnosis &
University of Corunna, Spain
Noha Veiguela Blanco, Artificial Neural Networks and Adapative Systems Group &
University of Corunna, Spain
Francisco Javier Novoa de Manuel, Center of Medical Informatics and Radiological
Diagnosis & University of Corunna, Spain
Julián Dorado de la Calle, University of A Coruña, Spain

Chapter XXIII
PACS Based on Open-Source Software Components ................................................................. 338
Daniel Welfer, Instituto de Informatica — Universidade Federal do Rio Grande do Sul, Brazil
Jacob Scharcanski, Instituto de Informatica — Universidade Federal do Rio Grande do Sul, Brazil

Section VII
Medical Decision Support Systems

Chapter XXIV
Case Based Reasoning for Customizing Treatment Processes ..................................................... 351
Carolin Kaiser, University of Erlangen-Nuremberg, Germany
Section VIII
Virtual Environments in Healthcare

Chapter XXV
A Holistic Perspective of Security in Health Related Virtual Communities ........................................... 367
I. Apostolakis, National School of Public Health, Greece
A. Chryssanthou, Greek Data Protection Agency, Greece
I. Varlamis, University of Peloponnese, Greece

Chapter XXVI
Virtual Learning Environments in Health ................................................................. 382
Stamata Ilioudi, University of Piraeus, Greece
Christina Ilioudi, University of Piraeus, Greece
Konstantinos Siassiakos, University of Piraeus, Greece

Chapter XXVII
Multimedia Distance Learning Solutions for Surgery ................................................................. 390
Jelena Vucetic, Alpha Mission, Inc., USA

Chapter XXVIII
Collaborative Virtual Environments and Multimedia Communication Technologies in Healthcare ................................................................. 399
Maria Andréia F. Rodrigues, Universidade de Fortaleza, Brazil
Raimir Holanda Filho, Universidade de Fortaleza, Brazil

Chapter XXIX
Transforming a Pediatrics Lecture Series to Online Instruction ................................................. 410
Tiffany A. Koszalka, Syracuse University, USA
Bradley Olson, SUNY Upstate Medical University, USA

Chapter XXX
Quality and Reliability Aspects in Telehealth Systems ................................................................. 425
Anastasia Kastania, Athens University of Economics and Business, Greece
Stelios Zimeras, University of the Aegean, Greece

Section IX
Data Evaluation, Validation, and Quality Aspects

Chapter XXXI
Quality of Health Information on the Internet ........................................................................... 443
Kleopatra Alamantariotou, City University London, UK
Chapter XXXII
A Practical Approach to Computerized System Validation ......................................................... 456
   Kashif Hussain, University of Valenciennes et Hainaut de Cambrésis, France
   Shazia Yasin Mughal, University of Valenciennes et Hainaut de Cambrésis, France
   Sylvie Leleu-Merviel, University of Valenciennes et Hainaut de Cambrésis, France

Chapter XXXIII
Organization and Evaluation of Experimental Measurements of Ergophysiological Data
with the Method of SF12V2 .............................................................................................................. 470
   Bill Ag Drougas, HATRLab & Higher Technological Institute of Epirus, Greece
   Maria Sevdali, Higher Technological Institute of Kalamata, Greece

Chapter XXXIV
Ubiquitous Risk Analysis of Physiological Data ......................................................................... 478
   Daniele Apiletti, Politecnico di Torino, Italy
   Elena Baralis, Politecnico di Torino, Italy
   Giulia Bruno, Politecnico di Torino, Italy
   Tania Cerquitelli, Politecnico di Torino, Italy

Section X
Ethical, Legal, and Other Issues in E-Health

Chapter XXXV
Chaotization of Human Systems by Technical Electromagnetic Fields ........................................ 493
   Manfred Doepp, Holistic DiagCenter, Germany

Chapter XXXVI
Demographic Differences in Telehealth Policy Outcomes ......................................................... 500
   Mary Schmeida, The Cleveland Clinic, USA
   Ramona McNeal, University of Northern Iowa, USA

Compilation of References ........................................................................................................... 509

About the Contributors ................................................................................................................. 550

Index ........................................................................................................................................... 566