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Editorial

Towards Clinical Bioinformatics

It is only 3 years ago that the IMIA Yearbook of Medical Informatics introduced for the first time a review article on bioinformatics, which was followed by the addition of a permanent section devoted to this critical new field of biomedical informatics. For 2004, we chose as theme “Towards Clinical Bioinformatics” in recognition of the great advances of genomic, proteomic, functional imaging and other technologies which are already having a significant impact on clinical research and practice. They promise to create an ever richer and broader overlap between the basic research into how genotypes map into phenotypes, how the latter can be characterized, and the clinical insights that will come from this knowledge.

The past year has seen an upsurge in studies and papers relating the biological and medical aspects of informatics, and the Yearbook contains a number of articles, both invited and reprinted, which address this growing research in biomedical informatics which is so essential to the development of genomic medicine. The rapid sequencing of whole-genomes for an increasing numbers of species, the ability to sequence and analyze host-parasite genomes in conjunction, and

the surge in comparative genomics studies at population levels has raised the health impact of the bioinformatics methodologies they are based on. It is for this reason that we have included an original review article on the Public Health Implications of Bioinformatics. The broad dissemination of publicly available data on molecular sequence, structure, and function has emphasized the critical role that systematic, meticulous curation of databases plays in making them useful as reference data for both research and clinical applications, and another original review article addresses these important issues.

The Preface to this Yearbook on the theme “Towards Clinical Bioinformatics” by Russ Altman of Stanford University, emphasizes the connections between the different trends in biomedical informatics, and ties their growth and impact to the availability of the web as a ubiquitous mechanism of access. Dr. Altman is a leading researcher in bioinformatics, editor of the journal *Bioinformatics*, and a tireless advocate for closer working relationships between biological and clinical informatics researchers. The editors greatly appreciate his contribution in introducing this Yearbook.

About the IMIA Yearbook of Medical Informatics

The Yearbook of Medical Informatics of the International Medical Informatics Association (IMIA) is distributed through IMIA's Member and Corresponding Member Societies worldwide. For the 2004 Yearbook we expect that over 7,000 copies will reach the memberships of 46 Member and 19 Corresponding member societies. The Yearbook editors appreciate the contributions of distinguished researchers in medical informatics who have prepared 4 invited review papers, 5 research and education papers, and 8 synopses of papers included in the different disciplinary fields covered. In addition we owe a debt of gratitude to the 64 reviewers who assisted in the selection of papers from the recent refereed literature.

The present Yearbook includes papers selected from the literature for the period April 2002 to March 2003. The criteria for selection include: significance, representativeness and coverage of research in a given subfield, presented at a high level of quality. A more detailed description of these quality criteria can be downloaded from http://www.Yearbook.uni-hd.de/quality_criteria.pdf. The referees score and rank the papers, and the final selection is made by the editors with the advice of the managing editors from each of the specialty areas.

History of Medical Informatics

Building on the success of the special retrospective Yearbook issue on "The Promise of Medical Informatics" in the year 2000, this year we are adding a new section on the "History of Medical Informatics" as part of the IMIA Yearbook. We chose as topic the "Reisensburg Protocol" of 1973 on medical informatics education, which

had a significant impact in establishing medical informatics as a discipline. While it is not presently planned to include such a section each year, we would like to encourage all members of the IMIA scientific community to send us suggestions for landmark papers on research, education, and the practice of medical informatics worldwide, which have contributed to the history of our field and which could be published in this section in the future. The early development and evolution of our field involves many international contributions which deserve to be more widely known, and the IMIA Yearbook can play an important role in documenting this history. We gratefully acknowledge the work of Professor Jochen Moehr, who carefully translated the Reisensburg protocol, and, as a colleague with medical informatics research and education experience both in Europe and in North America, provides valuable insights about the beginnings of our field from this comparative vantage point.

Reviews

As is customary, the 2004 Yearbook includes a number of original review articles, which focus primarily on this year's theme. In particular the papers by Claudia Englbrecht et al. and Victor Maojo et al. focus on important aspects of Bioinformatics. In addition, the paper of Mario Stefanelli on Knowledge Management in Health Care Organizations, is directly related to a major theme of the upcoming World Congress of Medical Informatics (MEDINFO 2004) to be held in San Francisco in September 2004.

Research and Education in Medical Informatics

The Yearbook provides an opportunity for highlighting an international

selection of current education, training, and research programs in Medical Informatics. In this 2004 edition, authors from the USA, Bosnia-Herzegovina, Brazil, Spain and Singapore summarize their educational and research approaches.

Guest Editors

After the selection of papers to be included in the Yearbook was completed, guest editors were asked to write Synopses reviewing the papers in the different sections. The special section on Towards Clinical Bioinformatics was edited by Piet de Groen of the Mayo Clinic, Rochester, MN. The section on Health and Clinical Management was edited by Bongo Monga of Abidjan; that on Patient Records by Amnon Shabo of the IBM Haifa Research Lab; that on Health Information Systems by Alfred Winter of the University of Leipzig; that on Biomedical Imaging by Andrew Pullan, University of Auckland; that on Medical Signal Processing by S. Sitharma Iyengar of the Louisiana State University; that on Education and Consumer Informatics by Charles Safran of Clinician Support Technology, Newton, MA, and that on Knowledge Processing and Decision Support by György Kozmann of the University of Veszprém.

Information on IMIA

The Yearbook contains detailed information about IMIA, its Member Societies, Regional Groups, Working Groups, and Special Interest Groups. Preparation of the general pages describing IMIA activities received considerable assistance from Steven Huesing, the Executive Director. The section on IMIA Working Groups and Special Interest Groups was greatly aided by contributions from Nancy

Lorenzi and Evelyn Hovenga. For the second time a more detailed report on the activities of IMIA regions is included with the help of Regional Editors. We would like to thank Arie Hasman (for EFMI), Sedick Isaacs (for Helina), Jochen Moehr and Charles Safran (for the North American IMIA Member Societies), Chun Por Wong (for APAMI) and Lincoln de Assis Moura, Jr. (for IMIA-Lac) for their valuable contributions. The IMIA representatives from the individual countries provided the material for their own national societies.

The 2005 IMIA Yearbook

The theme of the 2005 Yearbook will be “Ubiquitous Health Care Systems”, and will focus on the medical informatics contributions that make possible the development and widespread dissemination of these systems.

Acknowledgements

The editors gratefully acknowledge the contributions of the Referees and Guest Editors. They would also like to thank the writers of the critical Review Papers and the contributors to the Research and Education Section.

They are most appreciative of the considerable skill, time, and effort devoted by the Managing Editors, especially the Executive Managing Editor Elske Ammenwerth (UMIT - University for Health Informatics and Technology Tyrol, Innsbruck, Austria), and by the Section Managing Editors, Ralf Brandner (University of Heidelberg, Germany), Birgit Brigl (University of Leipzig, Germany), Gerald Fischer (UMIT), Sebastian Garde (University of Heidelberg), Petra

Knaup (University of Heidelberg), Elke Lang (University of Applied Sciences Darmstadt, Dieburg, Germany), Roland Pilgram (UMIT), Franz Ruderich (University of Applied Sciences, Heilbronn, Germany), Reiner Singer (University of Applied Sciences, Heilbronn) and Astrid Wolff (University of Heidelberg). Last, but not least, we especially want to thank the Editorial Assistant, Martina Hutter, from the Department of Medical Informatics at the University of Heidelberg, without whose untiring efforts the Yearbook would not have been completed.

The Editors also wish to thank the members of the Advisory Board for their invaluable contributions to the planning of this Yearbook. They are: Marion Ball, Vice-President of Healthlink, Inc. of Baltimore, MD, USA, Jan H. van Bommel, Rector of Erasmus University Rotterdam, The Netherlands, and Alexa McCray, Director of the Lister Hill Center of the National Library of Medicine, Bethesda, MD, USA.

The referees who contributed to the selection of articles in the 2004 Yearbook of Medical Informatics were:

Hans Åhlfeldt, Sweden
 Dominik Aronsky, USA
 Joan Ash, USA
 Suzanne Bakken, USA
 Pedro Barahona, Portugal
 Robert Baud, Switzerland
 Philip J. Bayliss-Brown, United Kingdom
 Marie Catherine Beuscart-Zéphir, France
 Jytte Brender, Denmark
 Helmar Burkhart, Switzerland
 Thomas Bürkle, Germany
 Yu-N Cheah, Malaysia
 James J. Cimino, USA
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Dawn Dowding, United Kingdom
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 Dragan Gamberger, Croatia
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 Mark van Gils, Finland
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 Ulrike Wittig, Germany
 Graham Wright, United Kingdom
 Guohong Zhou, China