

## Closing the Loops in Biomedical Informatics. Editorial

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### Summary

**Objectives:** To provide an editorial introduction to the 2009 IMIA Yearbook of Medical Informatics with an overview of its contents and contributors.

**Methods:** A brief overview of the main theme, and an outline of the purposes, contents, format, and acknowledgment of contributions for the 2009 IMIA Yearbook.

**Results:** This 2009 issue of the IMIA Yearbook highlights important, beneficial loops which, if closed, could lead to considerable advances in the field of biomedical informatics and, indirectly, in healthcare and biomedical research. Progress towards closing the loops and remaining gaps are identified from the recent literature, illustrated by selected papers published during the past 12 months.

**Conclusion:** Reviews and Surveys of the main research sub-fields in biomedical informatics in the Yearbook provide an overview of progress and current challenges across the spectrum of the discipline.

### Keywords

Editorial, 2009 IMIA Yearbook of Medical Informatics, surveys of biomedical informatics, reviews of biomedical informatics, history of biomedical informatics, IMIA and its societies

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## Introducing the 2009 Yearbook and its Theme on Closing Loops in Biomedical Informatics

The Yearbook includes a number of articles centered around the theme of Closing Loops in Biomedical Informatics, covering present and past informatics contributions as well as future directions in how the field has addressed challenging biomedical problems. The idea behind the theme is that, in the various domains of our field, there are gaps in information processes that prevent the realization of the potential benefits that are expected from the implementation of information systems in healthcare and biomedical research and education. As the visibility of biomedical informatics-enabled solutions grows rapidly, it comes with high expectations, and it becomes increasingly important to identify these gaps and the challenges and opportunities to close them.

In the introductory keynote, Reed Gardner, a pioneer in the field of clinical informatics, reflects on his career and its expectations, and shares his experience about the gaps in the various loops, with his signature critical look and humor. Surveys each address an aspect related to central themes of the discipline and the Yearbook: Bergh looks at the two-way collaboration between academia and industry, Li puts the patient back in the information loop as he examines various types of electronic health records and patient-controlled health records, and Saleem et al. look at the challenges and opportunities for better integrating human fac-

tors research with the development of clinical information systems. Lenz advocates the use of evolutionary systems architectures to ensure sustainability of information systems, while Tschopp et al. give a historical and present perspective on closed-loop mechanical ventilation. Park et al. look at the virtuous circle linking education, practice and research in nursing terminology, while Kohane takes a bibliomic view of the bioinformatics literature.

Reviews also cover topics related towards closing the loops in our field: Martin-Sanchez and Maojo discuss the possible convergence of nanotechnology, biology, informatics, and -cognitive factors in stimulating biomedical informatics research, while Iavindrasana et al. look at clinical data mining, an important element for bridging the wide and difficult data-knowledge gap.

In the research and education section, Luna and Margolis discuss biomedical informatics advances in South America, while Murray presents work done in South-Africa. Safran makes a persuasive case advocating informatics training for clinicians.

Ratib, a pioneer in the development of PACS systems in radiology, gives a historical perspective of the development of this field, illustrated by the paper from the conference where the term was coined.

## 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 Corre-

sponding Member Societies worldwide. Since its inception in 1992 it has been the single most important publication summarizing the activities of IMIA, and showcasing the best of medical informatics research for the previous year. Due to changing demands by its readership and the expanded availability of original papers over the web, the IMIA Yearbook of Medical Informatics has adopted a new format and mode of publication since 2006, with the goal of substantially broadening its availability to virtually all members of the IMIA family. In particular, surveys, giving overviews of recent developments, and comprehensive introductory reviews on relevant topics in the different fields of health and biomedical informatics, have been added as original articles. The Yearbook remains a non-profit publication of IMIA, jointly published with Schattauer Verlag. It is currently subscribed to by 23 of IMIA's national member societies, providing access for about 20.000 individual members.

## Information on IMIA and on its Regional Groups

For IMIA especially, and the biomedical informatics community more generally, this year was marked by the death of IMIA's executive director, Steven Huesing, who has been a pivotal figure in maintaining the continuity of the organization with its strong traditions of open international collaboration over a substantial part of IMIA's existence. We will all miss him deeply. Peter Murray has kindly agreed to complete Steven's term in the role of interim executive direction of IMIA.

An important challenge facing IMIA is the preparation of its triennial conference MEDINFO, which will take place for the first time in Africa, in Cape Town in 2010. Lyn Hanmer, President of the Local Organizing Committee presents the main themes of the conference.

The Yearbook contains detailed information about IMIA, its Member Societies, Regional Groups, Working Groups, and Special Interest Groups.

The section on IMIA Working Groups and Special Interest Groups was organized by Hyeoun-Ae Park. A detailed report on the activities of IMIA regions is included with the help of Regional Editors. We would like to thank Rolf Engelbrecht (for EFMI), Jack Li (for APAMI), Ghislain Kouematchoua (for HELINA), Alvaro Margolis (for IMIA LAC) and Karen Greenwood and RoseMary MacVicar-Elliott (for the North American IMIA Member Societies) for their valuable contributions.

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They especially wish to thank the Editorial Assistant, Martina Hutter, from the Medical Faculty at the University of Heidelberg, without whose untiring efforts the Yearbook would not have been completed. The editors appreciate the contributions of the Advisory Board to the planning of this Yearbook. They are Reinhold Haux, Fernando Martin-Sanchez, Georges Mihalas, and Peter Murray.

The referees who contributed to the selection of articles in the 2009 Yearbook of Medical Informatics were:

Kouhei Akazawa, Japan  
 Elske Ammenwerth, Austria  
 Samy A. Azer, Malaysia  
 Christopher J. O. Baker, Singapore  
 Olivier Bodenreider, USA  
 Alex A. T. Bui, USA  
 Jean Charlet, France  
 Karen Courtney, USA  
 Martin Dugas, Germany  
 Marius Fieschi, France  
 John Glaser, USA  
 Anita Grabar, France  
 Heinz Handels, Germany  
 Josef Ingenerf, Germany  
 Marie-Christine Jaulent, France  
 Michel Joubert, France  
 Katharina Kaiser, Austria  
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