Contents

**President’s Statement**
L. de Assis Moura Jr.
The Other Side(s) of Health Informatics 1

**Obituary**
P. Degoulet, M. Fieschi, M. Goldberg, R. Salamon
Professor François Grémy 3

**Editorial**
B. Séroussi, M.-C. Jaulent, C.U. Lehmann
Big 6

**Keynote**
R. Bellazzi
Big Data and Biomedical Informatics: A Challenging Opportunity 8

---

Special Section:
Big Data - Smart Health Strategies

**Survey**
F. Martin-Sanchez, K. Verspoor
Big Data in Medicine is Driving Big Changes 14

**Working Group Contributions**
M. M. Hansen, T. Miron-Shatz, A. Y. S. Lau, C. Paton
Big Data in Science and Healthcare: A Review of Recent Literature and Perspectives 21

Big Data Usage Patterns in the Health Care Domain: A Use Case Driven Approach Applied to the Assessment of Vaccination Benefits and Risks 27

D. R. Luna, J.C, Mayan, M.J. García, A.A. Almerares, H. Mowafa
Challenges and Potential Solutions for Big Data Implementations in Developing Countries 36

N. Peek, J. H. Holmes, J. Sun
Technical Challenges for Big Data in Biomedicine and Health: Data Sources, Infrastructure, and Analytics 42

**Synopsis**
V. Koutkias, F. Thiessard
Big Data - Smart Health Strategies 48

**Best Paper Selection**

Content summaries of:


Knowledge and theme discovery across very large biological data sets using distributed queries: a prototype combining unstructured and structured data. PloS One 2013 Dec 2;8(12):e80503 50


Section 1: Health and Clinical Management

Survey
C. Safran
Reuse Of Clinical Data

Synopsis
N. Bricon-Souf, E. Conchon
Trends on Integrating Framework of Applications or Data

Best Paper Selection
Content summaries of:


Section 2: Human Factors and Organizational Issues

Survey
V. L. Patel, T. G. Kannampallil
Human Factors and Health Information Technology: Current Challenges and Future Directions

Working Group Contributions
Human Factors in the Large: Experiences from Denmark, Finland and Canada in Moving Towards Regional and National Evaluations of Health Information System Usability

Big Data in Healthcare — Defining the Digital Person through User Contexts from the Micro to the Macro

Synopsis
G. Declerck, X. Aimé
Reasons (not) to Spend a Few Billions More on EHRs: How Human Factors Research Can Help

Best Paper Selection
Content summaries of:


Section 3: Health Information Systems

Survey

M. K. Ross, Wei Wei, L. Ohno-Machado
“Big Data” and the Electronic Health Record

97

Working Group Contributions

J. Nakaya, M. Kimura, S. Ogishima, A. Shabo, I. K. Kim, C. Parisot, B. de Faria Leao
Future Direction of IMIA Standardization

105

A. K. Lyseen, C. Nohr, E. B. Sørensen, O. Gudes, E. M. Geraghty, N. T. Shaw, C. Bivona-Tellez
A Review and Framework for Categorizing Current Research and Development in Health Related Geographical Information Systems (GIS) Studies

110

Synopsis

L. Toubiana, M. Cuggia
Big Data and Smart Health Strategies: Findings from the Health Information Systems Perspective

125

Best Paper Selection

Content summaries of:


126


126


127


127

Section 4: Sensor, Signal and Imaging Informatics

Survey

G. Carrault, P. Mabo
Are Electronic Cardiac Devices Still Evolving?

128

Working Group Contributions

S. J. Redmond, N. H. Lovell, G. Z. Yang, A. Horsch, P. Lukowicz, L. Murrugarra, M. Marschollek
What Does Big Data Mean for Wearable Sensor Systems?

135

V. Vimarlund, S. Wass
Big Data, Smart Homes and Ambient Assisted Living

143

Synopsis

S. Voros, A. Moreau-Gaudry
Sensor, Signal, and Imaging Informatics: Big Data and Smart Health Technologies

150

Best Paper Selection

Content summaries of:


151


151


151


152
Section 5: Decision Support

Survey
IBM’s Health Analytics and Clinical Decision Support

Synopsis
J. Bouaud, J.-B. Lamy
A 2014 Medical Informatics Perspective on Clinical Decision Support Systems: Do We Hit The Ceiling of Effectiveness?

Best Paper Selection
Content summaries of:


Section 6: Knowledge Representation and Management

Synopsis
N. Griffon, J. Charlet, S. J. Darmoni
Managing Free Text for Secondary Use of Health Data

Best Paper Selection
Content summaries of:


Section 7: Education and Consumer Health Informatics

Survey
D. Z. Sands, J. S. Wald
Transforming Health Care Delivery Through Consumer Engagement, Health Data Transparency, and Patient-Generated Health Information

Working Group Contributions
P. Otero, W. Hersh, A. U. Jai Ganesh
Big Data: Are Biomedical and Health Informatics Training Programs Ready?

A. Hartzler, T. Wetter
Engaging Patients through Mobile Phones: Demonstrator Services, Success Factors, and Future Opportunities in Low and Middle-income Countries

Synopsis
P. Staccini, N. Douali
Social Media and Patient Health Outcomes
Best Paper Selection

Content summaries of:


Van Der Velden M, El Emam K. “Not all my friends need to know”: a qualitative study of teenage patients, privacy, and social media. J Am Med Inform Assoc 2013;20(1):16-24


Section 8: Bioinformatics and Translational Informatics

Survey

J. C. Denny
Surveying Recent Themes in Translational Bioinformatics: Big Data in EHRs, Omics for Drugs, and Personal Genomics

Working Group Contribution

L. J. Frey, L. Lenert, G. Lopez-Campos
EHR Big Data Deep Phenotyping

Synopsis

T. Lecroq, L. F. Sounalma
Managing Large-Scale Genomic Datasets and Translation into Clinical Practice

Best Paper Selection

Content summaries of:


Section 9: Clinical Research Informatics

Survey

R. L. Richesson, M. Horvath, S. A. Rusincovitch
Clinical Research Informatics and Electronic Health Record Data

Synopsis

C. Daniel, R. Choquet
Information Technology for Clinical, Translational and Comparative Effectiveness Research

Best Paper Selection

Content summaries of:


### Research & Education

Healthcare Information Technology Infrastructures in Turkey  
228

### History of Medical Informatics

H. E. Peterson, I. Jungner  
The History of the AutoChemist®: From Vision to Reality  
235

L. Ohlsén, I. Jungner, H. E. Peterson  
The History of the Data Systems AutoChemist® (ACH) and AutoChemist-PRISMA (PRISMA®): from 1964 to 1986  
244

### IMIA Award

R. Haux  
On Determining Factors for Good Research in Biomedical and Health Informatics  
255

A. Hasman, W. Hersh, N. M. Lorenzi, E. H. Shortliffe, J. H. van Bemmel  
Commentaries on the IMIA Award of Excellence Lecture by Reinhold Haux  
265

### Information on IMIA

Information on IMIA  
273
Honorary Fellows  
276
IMIA Member Societies  
277
Institutional Members  
278
Addresses of IMIA Member Societies  
280

### Information on IMIA Regions

Information on APAMI (Asia Pacific Association for Medical Informatics)  
295
Information on Helina (African Region)  
297
Information on IMIA-LAC (Federation of Health Societies in Latin America)  
299
Information on North-American Medical Informatics (NAMI)  
300
Information on EFMI (European Federation For Medical Informatics)  
306
Information on EFMI Working Groups  
308

### Miscellaneous

Contributors  
319
MIA Yearbook Special Topics  
320