

# **2014 IEEE 27th International Symposium on Computer-Based Medical Systems**

**(CBMS 2014)**

**New York, New York, USA  
27 – 29 May 2014**



**IEEE Catalog Number: CFP14CBM-POD  
ISBN: 978-1-4799-4434-7**

# 2014 IEEE 27th International Symposium on Computer-Based Medical Systems

## CBMS 2014

### Table of Contents

<b>Welcome Message from the CBMS 2014 Organizing</b>	
<b>Committee</b> .....	xvii
<b>Committees</b> .....	xviii
<b>Program Committee</b> .....	xx
<b>Steering Committee</b> .....	xxi
<b>Sponsors</b> .....	xxii

---

#### **Clinical Decision Support**

Using Participant Similarity for the Classification of Epidemiological Data on Hepatic Steatosis .....	1
<i>Tommy Hielscher, Myra Spiliopoulou, Henry Völzke, and Jens-Peter Kühn</i>	
Parametric Power Spectrum Analysis of ECG Signals for Obstructive Sleep Apnoea Classification .....	8
<i>Xinqi Louis Wang, J. Mikael Eklund, and Carolyn McGregor</i>	
Social-Spider Optimization-Based Artificial Neural Networks Training and Its Applications for Parkinson’s Disease Identification .....	14
<i>L.A.M. Pereira, D. Rodrigues, P.B. Ribeiro, J.P. Papa, and Silke A.T. Weber</i>	
NerveGPS: A Novel Decision Support System for Ultrasound Nerve Block Guidance .....	18
<i>Christophe Philippona, Joshua Morse, Mohamad Wehbe, Marilu Giacalone, Shantale Cyr, Roy Kazan, and Thomas M. Hemmerling</i>	
Automated Sleep-Wake Detection in Neonates from Cerebral Function Monitor Signals .....	22
<i>J. Mikael Eklund, Nicholas Fontana, Edward Pugh, Carolyn McGregor, Paul Yelder, Andrew James, Matthew Keyzers, Cecil Hahn, and Patrick McNamara</i>	
Can We Avoid Unnecessary Polysomnographies in the Diagnosis of Obstructive Sleep Apnea? A Bayesian Network Decision Support Tool .....	28
<i>Liliana Leite, Cristina Costa-Santos, and Pedro Pereira Rodrigues</i>	

A Method for a Real-Time Novel Premature Infant Pain Profile Using High Rate, High Volume Physiological Data Streams .....	34
<i>Tanvi Naik, Anirudh Thommandram, K.E. Shiron Fernando, Nadja Bressan, Andrew James, and Carolyn McGregor</i>	
FRAT-Up, a Rule-Based System Evaluating Fall Risk in the Elderly .....	38
<i>Luca Cattelani, Federico Chesani, Pierpaolo Palumbo, Luca Palmerini, Stefania Bandinelli, Clemens Becker, and Lorenzo Chiari</i>	
Applying Speculative Computation to Guideline-Based Decision Support Systems .....	42
<i>Tiago Oliveira, José Neves, Paulo Novais, and Ken Satoh</i>	
Tracebook: A Dynamic Checklist Support System .....	48
<i>Shan Nan, Pieter Van Gorp, Hendrikus H.M. Korsten, Richard Vdovjak, Uzay Kaymak, Xudong Lu, and Huilong Duan</i>	
Optimum-Path Forest Applied for Breast Masses Classification .....	52
<i>Patricia B. Ribeiro, Kelton A.P. da Costa, João P. Papa, and Roseli A.F. Romero</i>	
Using Probabilistic Graphical Models to Enhance the Prognosis of Health-Related Quality of Life in Adult Survivors of Critical Illness .....	56
<i>Cláudia Camila Dias, Cristina Granja, Altamiro Costa-Pereira, João Gama, and Pedro Pereira Rodrigues</i>	
Learning Features from Medical Radiofrequency Ultrasonic Signals by Independent Component Analysis .....	62
<i>Mahdi Tabassian, Nicola Testoni, Luca De Marchi, Francesca Galluzzo, Nicolo Speciale, and Guido Masetti</i>	
<b>Security and Privacy</b>	
A Benchmark of Globally-Optimal Anonymization Methods for Biomedical Data .....	66
<i>Fabian Prasser, Florian Kohlmayer, and Klaus A. Kuhn</i>	
An Agent-Based Infrastructure for Secure Medical Imaging System Integration .....	72
<i>Weina Ma and Kamran Sartipi</i>	
Privacy-Aware Large-Scale Virological and Epidemiological Data Monitoring .....	78
<i>Constantinos Patsakis, Michael Clear, Paul Laird, Athanasios Zigomitros, and Mélanie Bourouche</i>	
An Expertise-Driven Authoring Tool for E-Health Data Policies .....	82
<i>Riccardo Conti, Iliaria Matteucci, Paolo Mori, and Marinella Petrocchi</i>	
The Role of Inference in the Anonymization of Medical Records .....	88
<i>Athanasios Zigomitros, Agusti Solanas, and Constantinos Patsakis</i>	

## Medical Education and Patient Simulation

Deformation Method Using Physical Parameters Composed of Different Tissue Structures .....	94
<i>Ana C.M.T.G. Oliveira, Romero Tori, João L. Bernardes, Rafael S. Torres, Wyllian Brito, and Fátima L.S. Nunes</i>	
A Framework for a Social Semantic Registry of IT Skills for Healthcare Workforce .....	100
<i>Stathis Th. Konstantinidis and Panagiotis D. Bamidis</i>	
Decoding Movements from Human Deep Brain Local Field Potentials Using Radial Basis Function Neural Network .....	105
<i>Mohammad S. Islam, Muhammad S. Khan, Hai Deng, and Khondaker A. Mamun</i>	
Development of an Algorithm for Register the Movement of the Instrumental in a Simulator for Screw Positioning in the Lumbar Region .....	109
<i>N. Garcia-Morales, D. Lorias, V. Gonzales, and F. Chico</i>	
Patient-Specific Interactive Simulation of Compression Ultrasonography .....	113
<i>Kresimir Petrinc, Eric Savitsky, and Demetri Terzopoulos</i>	
Using Simulations and Experiential Learning Approaches to Train Careers of Seniors .....	119
<i>Panagiotis D. Bamidis, Panagiotis Antoniou, and Efstathios A. Sidiropoulos</i>	
Pilot Study: Supplementing Surgical Training for Medical Students Using a Low-Cost Virtual Reality Simulator .....	125
<i>Chung Hyuk Park, Kenneth L. Wilson, and Ayanna M. Howard</i>	
Death in High-Fidelity Simulation: A Bioethical Analysis .....	128
<i>Andrew Goldberg, Jesse Hochkeppel, Adam Levine, and Samuel DeMaria</i>	

## Image Processing

Robust Visual Tracking for Retinal Mapping in Computer-Assisted Slit-Lamp Imaging .....	132
<i>Mateus Souza, Rogério Richa, André Puel, Jonas Caetano, Eros Comunello, and Aldo von Wangenheim</i>	
Rotation Detection in Chest Radiographs Based on Generalized Line Histogram of Rib-Orientations .....	138
<i>K.C. Santosh, S. Candemir, S. Jaeger, L. Folio, A. Karargyris, S. Antani, and G. Thoma</i>	
Calculation and Visualization of Range of Motion of Hip Joint from MRI .....	143
<i>Sahar Aghayan and Wonsook Lee</i>	
Computing Cardiac Strain from Variational Optical Flow in Four-Dimensional Echocardiography .....	149
<i>Saurabh Vyas, James S. Gammie, and Philippe Burlina</i>	
Investigation of the Impact of Compression on the Perceptual Quality of Laparoscopic Videos .....	153
<i>Bernd Münzer, Klaus Schoeffmann, Laszlo Böszörményi, J.F. Smulders, and Jack J. Jakimowicz</i>	

Performance Evaluation of Medical Image Similarity Analysis in a Heterogeneous Architecture .....	159
<i>José Raniery Ferreira Junior, Marcelo Costa Oliveira, and André Lage Freitas</i>	
Using Sub-dictionaries for Image Representation Based on the Bag-of-Visual-Words Approach .....	165
<i>Glauco Vitor Pedrosa, Agma J.M. Traina, and Caetano Traina Jr.</i>	
New Image Analysis Technique for Quantitative Longitudinal Assessment of Lung Pathology on CT in Infected Rhesus Macaques .....	169
<i>Jeffrey Solomon, Deborah Douglas, Reed Johnson, and Dima Hammoud</i>	
An Automated Approach for Fibrin Network Segmentation and Structure Identification in 3D Confocal Microscopy Images .....	173
<i>Jianxu Chen, Oleg V. Kim, Rustem I. Litvinov, John W. Weisel, Mark S. Alber, and Danny Z. Chen</i>	
Real-Time Fine-Tuned Adjustment of Fiber Tracking Parameters .....	179
<i>Adiel Mittmann, Eros Comunello, and Aldo von Wangenheim</i>	
On the Automation of the Tear Film Non-invasive Break-up Test .....	185
<i>A. Carpente, L. Ramos, N. Barreira, M.G. Penedo, H. Pena-Verdeal, and M.J. Giráldez</i>	
An Information Theoretic Approach via IJM to Segmenting MR Images with MS Lesions .....	189
<i>Jason E. Hill, Brian Nutter, and Sunanda Mitra</i>	
Evaluating a Row-Store Data Model for Full-Content DICOM Management .....	193
<i>Alexandre Savaris, Theo Härder, and Aldo von Wangenheim</i>	
Body Segment Classification for Visible Human Cross Section Slices .....	199
<i>Zhiyun Xue, Sameer Antani, L. Rodney Long, Dina Demner-Fushman, and George R. Thoma</i>	
A Multicriteria Method for Cervical Tumor Segmentation in Positron Emission Tomography .....	205
<i>André Luís Resende Monteiro, Alexei Manso Correa Machado, and Marcelo Henrique Mamede Lewer</i>	
A Novel Model-Based Measure for Quality Evaluation of Image Registration Techniques in DCE-MRI .....	209
<i>Stefano Marrone, Gabriele Piantadosi, Roberta Fusco, Antonella Petrillo, Mario Sansone, and Carlo Sansone</i>	
Classifying Craniosynostosis with a 3D Projection-Based Feature Extraction System .....	215
<i>Irma Lam, Michael Cunningham, Matthew Speltz, and Linda Shapiro</i>	
<b>Bioinformatics/Computational Biology</b>	
Capturing Human Body Dynamics Using RNN Based on Persistent Excitation Data Generator .....	221
<i>Alaa Abdulrahman and Kamran Iqbal</i>	
HErCoOl: High-Throughput Error Correction by Oligomers .....	227
<i>Franco Milicchio and Mattia C.F. Prosperi</i>	

A Self-Tuning Genetic Algorithm with Applications in Biomarker Discovery .....	233
<i>Dusan Popovic, Charalampos Moschopoulos, Ryo Sakai, Alejandro Sifrim, Jan Aerts, Yves Moreau, and Bart De Moor</i>	
Towards Using Probabilities and Logic to Model Regulatory Networks .....	239
<i>António Gonçalves, Irene Ong, Jeffrey A. Lewis, and Vítor Santos Costa</i>	
Assessment of G-quadruplex Prediction Tools .....	243
<i>Giuseppe Tradigo, Laura Mannella, and Pierangelo Veltri</i>	
miXGENE Tool for Learning from Heterogeneous Gene Expression Data Using Prior Knowledge .....	247
<i>Matej Holec, Valentin Gologuzov, and Jirí Kléma</i>	
<b>Electronic Medical Records and Systems Integration</b>	
Adverse Drug Event Notification System: Reusing Clinical Patient Data for Semi-automatic ADE Detection .....	251
<i>Tobias Krahn, Marco Eichelberg, Stefan Gudenkauf, Gokce B. Laleci Erturkmen, and H.-Jürgen Appelrath</i>	
Tracheostomy Transfers: A Case Study in the Application of Formal Methods to Intra-hospital Patient Transfers .....	257
<i>Areti Manataki, Jacques Fleuriot, and Petros Papapanagiotou</i>	
Real-World Data Set Parameters and Synthesization for Matching Identity in Clinical Protocols .....	263
<i>Hanna Farah, Daniel Amyot, and Khaled El Emam</i>	
Electronic Health Records: A Survey of the Experiences and Expectations of Irish Dermatologists .....	267
<i>Dmitri Robert Wall, Caitriona B. Hackett, Bridget Kane, Kashif Ahmad, and Bart Ramsay</i>	
<b>Internet Health Search and Discovery</b>	
Social Network Analysis to Delineate Interaction Patterns That Predict Weight Loss Performance .....	271
<i>Taridzo Chomutare, Anna Xu, and M. Sriram Iyengar</i>	
Semantic Search and NLP-Based Diagnostics .....	277
<i>Yefim Kats</i>	
Maturity Assessment of Wikipedia Medical Articles .....	281
<i>Riccardo Conti, Emanuel Marzini, Angelo Spognardi, Ilaria Matteucci, Paolo Mori, and Marinella Petrocchi</i>	

## Big Data/Data Processing and Analysis

Being Similar is Not Enough: How to Bridge Usability Gap through Diversity in Medical Images .....	287
<i>Lúcio F.D. Santos, Marcos V.N. Bedo, Marcelo Ponciano-Silva, Agma J.M. Traina, and Caetano Traina Jr.</i>	
Profiling Cardiovascular Disease Event Risk through Clustering of Classification Association Rules .....	294
<i>Shen Song, Jim Warren, and Patricia Riddle</i>	
Biological Image Indexing for Content-Based Retrieval of Drug Effects in Phenotypic Screening Data of Macroparasites .....	300
<i>Ahmed Gater and Rahul Singh</i>	
Dimensionality Reduction with Random Indexing: An Application on Adverse Drug Event Detection Using Electronic Health Records .....	304
<i>Isak Karlsson and Jing Zhao</i>	
MedInject: A General-Purpose Information Retrieval Framework Applied in a Medical Context .....	308
<i>Luiz Olmes Carvalho, Enzo Seraphim, Thatyana F.P. Seraphim, Agma J.M. Traina, and Caetano Traina Júnior</i>	
Efficient Procedure and Methods to Determine Critical Electroporation Parameters .....	314
<i>Gaddi Blumrosen, Alireza Abazari, Alexander Golberg, Mehmet Tonner, and Martin L. Yarmush</i>	
Large-Scale Methodological Comparison of Acute Hypotensive Episode Forecasting Using MIMIC2 Physiological Waveforms .....	319
<i>Yongwook Bryce Kim, Joohyun Seo, and Una-May O'Reilly</i>	
A Real-Time Multi-dimensional Visualization Framework for Critical and Complex Environments .....	325
<i>Rishikesan Kamaleswaran and Carolyn McGregor</i>	

## Ontologies, Terminologies, and Natural Language Processing

A Domain Specific Ontology Authoring Environment for a Clinical Documentation System .....	329
<i>Matthew Horridge, Sebastian Brandt, Bijan Parsia, and Alan L. Rector</i>	
Nanopublishing Clinical Diagnoses: Tracking Diagnostic Knowledge Base Content and Utilization .....	335
<i>Alejandro Rodríguez González, Marcos Martínez Romero, Mikel Egaña Aranguren, and Mark D. Wilkinson</i>	
Computable Declarative Representation of Clinical Assessment Scales in EHRs .....	341
<i>Mercedes Argüello Casteleiro, Nicolas Matentzoglu, Bijan Parsia, and Sebastian Brandt</i>	
Computer-Based Coding of Occupation Codes for Epidemiological Analyses .....	347
<i>Daniel E. Russ, Kwan-Yuet Ho, Calvin A. Johnson, and Melissa C. Friesen</i>	

The Medical Cyber-physical Systems Activity at EIT: A Look under the Hood .....	351
<i>Daniel Sonntag, Sonja Zillner, Samarjit Chakraborty, Andras Lorincz, Esko Strommer, and Luciano Serafini</i>	

Estimating and Analysing Coordination in Medical Terminologies .....	357
<i>Cornelia Hedeler, Bijan Parsia, and Sebastian Brandt</i>	

## **Collaboration Tools**

Effects of Mobile Video-Mediated Communication for Health Care Professionals in Advanced Home Care of Children .....	363
<i>Johan Fredriksson, Kristina Groth, Minna Räsänen, Helena Bergius, and Emma Rylander</i>	

Multidisciplinary Work Practices: A Comparison of Three Major European Hospitals .....	369
<i>Bridget Kane and Kristina Groth</i>	

Defeasible Reasoning and Argument-Based Systems in Medical Fields: An Informal Overview .....	376
<i>Luca Longo and Pierpaolo Dondio</i>	

Expanding the HCI Agenda in Healthcare .....	382
<i>Bridget Kane and Saturnino Luz</i>	

Patients in Transition: E-Messages as a Tool for Collaboration between Hospital and Community Healthcare—A Norwegian Case .....	386
<i>Line Melby, Pieter Toussaint, and Ragnhild Hellesø</i>	

BUCOMAX: Collaborative Multimedia Platform for Real Time Manipulation and Visualization of Bucomaxillofacial Diagnostic Images .....	392
<i>André Puel, Aldo von Wangenheim, Maria Inês Meurer, and Douglas D.J. de Macedo</i>	

Aspects of Socially Assistive Robots Design for Dementia Care .....	396
<i>Nikola Nestorov, Emer Stone, Patrick Lehane, and Richard Eibrand</i>	

A Laboratory-Targeted, Data Management and Processing System for the Early Detection Research Network .....	401
<i>Rishi Verma, Andrew F. Hart, Chris A. Mattmann, Daniel J. Crichton, Heather Kincaid, Sean C. Kelly, Michael J. Joyce, Paul Zimdars, David L. Tabb, Jay D. Holman, Matthew Chambers, Kristen Anton, Maureen Colbert, Christos Patriotis, and Sudhir Srivastava</i>	

## **Monitoring and Devices**

Early Experiences in COPD Exacerbation Detection .....	406
<i>Mario Merone, Leonardo Onofri, Paolo Soda, Claudio Pedonez, Raffaele Antonelli Incalviz, and Giulio Iannello</i>	

Data Recording, Amplification, and Acquisition System for Microelectrode Array .....	411
<i>Francisco Fambrini, Marco Antonio Barreto, and José Hiroki Saito</i>	

Effectively Introducing Mobile Solutions in Hospitals: The Importance of Process Perspective and KPIs .....	417
<i>Paolo Locatelli, Roberta Facchini, Roberto Moser, Luca Gastaldi, Mariano Corso, Elena Sini, and Michele Torresani</i>	



Pervasive Motion Tracking and Muscle Activity Monitor .....	421
<i>Richard Woodward, Sandra Shefelbine, and Ravi Vaidyanathan</i>	
Novel Technology of Non-invasive Cerebrovascular Autoregulation Monitoring .....	427
<i>Vytautas Petkus, Solventa Krakauskaitė, Romanas Chomskis, Laimonas Bartusis, Arminas Ragauskas, Aidanas Preiksaitis, and Saulius Rocka</i>	
Mobili-T: A Mobile Swallowing-Therapy Device: An Interdisciplinary Solution for Patients with Chronic Dysphagia .....	431
<i>Gabriela Constantinescu, Eleni Stroulia, and Jana Rieger</i>	
Design and Evaluation of a Smartphone Based Wearable Life-Logging and Social Interaction System .....	435
<i>William Burns, Chris Nugent, Paul McCullagh, and Huiru Zheng</i>	
EMG-Miner: Automatic Acquisition and Processing of Electromyographic Signals: First Experimentation in a Clinical Context for Gait Disorders Evaluation .....	441
<i>N. Ielpo, B. Calabrese, M. Cannataro, A. Palumbo, S. Ciliberti, C. Grillo, and M. Iocco</i>	
Low Noise Microelectrode Array Signal Headstage Pre-amplifier for In-Vitro Neuron Culture .....	447
<i>Francisco Fambrini, Marco Antonio Barreto, and José Hiroki Saito</i>	
Innovative Computerized Non-invasive Intracranial Pressure Measurement Technology and Its Clinical Validation .....	451
<i>Solventa Krakauskaitė, Vytautas Petkus, Rolandas Zakelis, Laimonas Bartusis, Romanas Chomskis, and Arminas Ragauskas</i>	
<b>Special Presentation</b>	
A Bibliometrics Review of CBMS Symposiums Papers from 1993 Till 2013 .....	455
<i>Peter Kokol, Milan Zorman, Bojan Žlahtič, Grega Žlahtič, and Helena Blažun</i>	
ICANN, Health Information and the “Dot Health” Top Level Domain .....	460
<i>Anthony E. Solomonides</i>	
<b>Posters</b>	
Analysis Traceability for Biomedical Researchers .....	463
<i>Richard McClatchey, Jetendr Shamdasani, Andrew Branson, Kamran Munir, Saad Liaquat, and Giovanni Frisoni</i>	
Integrating Clinical Data from Cross-Sectional and Longitudinal Studies .....	465
<i>Yuanxi Li and Allan Tucker</i>	
Automatic Segmentation of the Mandible in Cone-Beam Computer Tomography Images .....	467
<i>M. Brandariz, N. Barreira, M.G. Penedo, and M. Suárez-Cunqueiro</i>	
In-Silico Characterization of Human Metallothionein (MT-1E) and Its Role in Prevention and Therapy of Bladder Cancer with Dietary Agents .....	469
<i>Sudeep Roy and Ivo Provaznik</i>	
Does Figure-Text Improve Biomedical Article Retrieval? A Pilot Study .....	471
<i>Daekeun You, Sameer Antani, Dina Demner-Fushman, and George R. Thoma</i>	

TICoMS—A Modular and Message-Based Framework for Monitoring and Control of Medical Devices .....	473
<i>Jörg Peter, Wilfried Klingert, Alfred Königsrainer, Wolfgang Rosenstiel, Martin Bogdan, and Martin Schenk</i>	
An Adaptive Testing Model for Assessment of Numeracy in Patients .....	475
<i>Mandana Omidbakhsh and Thiruvengadam Radhakrishnan</i>	
Evaluation of Classifiers to a Childhood Pneumonia Computer-Aided Diagnosis System .....	477
<i>Rafael T. Sousa, Oge Marques, Gabriela T.F. Curado, Ronaldo M. da Costa, Anderson S. Soares, Fabrizzio A.A.M.N. Soares, and Leandro L.G. de Oliveira</i>	
Non-contact Sensation Screening of Diabetic Foot Using Low Cost Infrared Sensors .....	479
<i>Greg Iven, Viktor Chekh, Shuang Luan, Abdullah Mueen, Peter Soliz, Wenyao Xu, and Mark Burge</i>	
2D/3D Non-rigid Image Registration by an Efficient Demons Approach .....	481
<i>Ashutosh Mishra, Pulak Mondal, and Swapna Banerjee</i>	
Package Insert Leaflet Analysis and Improvement to Reduce Patient Risk Factors: A Pharmacovigilance Approach in Computer Science .....	483
<i>Fabian Merges, Sara Nasiri, and Madjid Fathi</i>	
Comparative Analysis of Golay Code Based Excitation and Coherent Averaging for Non-invasive Glucose Monitoring System .....	485
<i>Satyabrata Sarangi, Praful P. Pai, Pradyut Kumar Sanki, and Swapna Banerjee</i>	
Improving Health Care Access Using Geographic Information Systems: SISMeter-GIS: A Study of Referencing for Childbirth in a University Maternity in Belo Horizonte, Brazil .....	487
<i>Juliano de Souza Gaspar, Zilma Silveira Nogueira Reis, Rafael Rocha Gusmão, and Thabata Sá</i>	
User-Friendly UIs for the Execution of Clinical Practice Guidelines .....	489
<i>Fazle Rabbi and Wendy MacCaull</i>	
Diagnosis of the Electrocardiogram Using a Smartphone .....	491
<i>Elizabeth Martin, Chris Nugent, Raymond Bond, Dewar Finlay, and Cathal Breen</i>	
Unsupervised Vector Quantization for Robust Lung State Estimation of an EIT Image Sequence .....	493
<i>Philipp Hörler, Guido Schuster, and Reto Bonderer</i>	
Second Opinion System for Intraoral Lesions .....	495
<i>Orazio Gambino, Fausto Lima, Roberto Pirrone, Edoardo Ardizzone, Giuseppina Campisi, and Olga di Fede</i>	
Need and Requirements Elicitation for Electronic Access to Patient's Medication History in the Emergency Department .....	497
<i>Margarida David, Fernando Rosa, and Pedro Pereira Rodrigues</i>	
A Tool for Simple and Efficient Clinical Protocol Evaluation .....	499
<i>Hanna Farah, Daniel Amyot, and Khaled El Emam</i>	
Computer Aided Medical Diagnosis Tool to Detect Normal/Abnormal Studies in Digital MR Brain Images .....	501
<i>Juan Gutierrez-Cáceres, Christian Portugal-Zambrano, and César Beltrán-Castañón</i>	

Linking Clinicians to Biomedical Researchers: An Application of the ISF Ontology at Stony Brook Medicine .....	503
<i>Janos G. Hajagos and Viviktesh Agwan</i>	
A Comparative Study on Interpolation Methods in Rebinning Circular Fan-Beam Data into Parallel-Beam Data .....	505
<i>Sunsik Ryu and Jongduk Baek</i>	
Real-Time Biomedical Instance Selection .....	507
<i>Chongsheng Zhang, Roberto D'Ambrosio, and Paolo Soda</i>	
NUTES ProLS: Specification of an Environment for Prototyping and Evolving EHR Data Collection Systems .....	509
<i>Antonio D. dos S. Junior, Paulo E.S. Barbosa, Normando G. de C. Junior, Sidney A. Rodrigues, Misael Morais, and Robson Pequeno</i>	
A Computer Aided Diagnosis of ECG .....	511
<i>Robson Pequeno de Sousa, Kátia Elizabete Galdino, Misael Elias de Morais, Carlos Wilson D. de Almeida, Adson D.D. da Silva, Valderi M. da Silva, Luiz A.C. Filho, and Saulo S. de Toledo</i>	
An Architecture for Information Retrieval in a Telemedicine System .....	513
<i>Andrei de Souza Inácio, Douglas D.J. de Macedo, Rafael Andrade, and Aldo von Wangenheim</i>	
An Approach to Evaluating Quality of Context Parameters in an Ambient Assisted Living Environment .....	515
<i>Débora Cabral Nazário, Igor Vilas Boas, Mário Antônio Ribeiro Dantas, and José Leomar Todesco</i>	
Design and Development of a Gastrointestinal Simulator System with Software That Allows to Find the Anatomical Location and a Flexible Endoscope Emulator .....	517
<i>E. Moncisvalles, D. Lórias, A. Minor, and J. Villalobos</i>	
SCOOP—The Social Collaboratory for Outcome Oriented Primary Care .....	519
<i>Morgan Price, Jens H. Weber, and Glen McCallum</i>	
Assessing the Quality of Water Solutions Using an Adaptive Multichannel Spectroellipsometer .....	521
<i>F.A. Mkrtychyan and V.F. Krapivin</i>	
Liver Segmentation in Contrast Enhanced MR Datasets Using a Probabilistic Active Shape and Appearance Model .....	523
<i>Klaus Drechsler, Anton Knaub, Cristina Oyarzun Laura, and Stefan Wesarg</i>	
Improving the Information Security Management: An Industrial Study in the Privacy of Electronic Patient Records .....	525
<i>Ying He, Chris Johnson, Yu Lu, and Yixia Lin</i>	
Development of Retrieval and Storage System of Electronic Medical Information in S. Korea .....	527
<i>Jongtaik Lee</i>	

Identifying and Evaluating Usability Heuristics Applicable to Clinical Laboratory Systems .....	529
<i>João Marcus Alves, Christiane Gresse von Wangenheim, Alexandre Savaris, and Aldo von Wangenheim</i>	
Integrating Data from EHRs to Enhance Clinical Decision Making: The Inflammatory Bowel Disease Case .....	531
<i>Mohamed Abouzahra, Kamran Sartipi, David Armstrong, and Joseph Tan</i>	
A Secure Cloud Manager for the X1.V1 Platform .....	533
<i>Emanuel Marzini, Paolo Mori, Sergio Di Bona, Davide Guerri, Marco Lettere, and Laura Ricci</i>	
Discovering Differentially Expressed Genes in Yeast Stress Data .....	537
<i>Antônio Gonçalves, Irene Ong, Jeffrey A. Lewis, and Vítor Santos Costa</i>	
An MRF Model for Biomedical Image Segmentation .....	539
<i>Daekeun You, Sameer Antani, Dina Demner-Fushman, and George R. Thoma</i>	
Towards the Stress Analytics Framework: Managing, Mining, and Visualizing Multi-modal Data for Stress Awareness .....	541
<i>Hindra Kurniawan and Mykola Pechenizkiy</i>	
Application of Ensemble Averaging to the Analysis of Electromyography Recordings under Whole Body Vibratory Stimulation .....	543
<i>Antonio Fratini, Paolo Bifulco, and Mario Cesarelli</i>	
Wandering Data: A Scalable, Durable System for Effective Visualization of Patient Health Data .....	547
<i>Alexander Roederer, Jacqueline Soegaard, Insup Lee, Jonathan Wanderer, and Soojin Park</i>	
Computer-Aided Prognosis Based on Temporal Dependencies .....	549
<i>Daniel Cardoso and Cláudia Antunes</i>	
Haptic System for Force-Profile Acquisition and Display for a Realistic Surgical Simulator .....	551
<i>Ibrahim Dawha, Saihou Bi Gorreh, Andrew Olowude, and Chung Hyuk Park</i>	
Automated Classification of Computer-Based Medical Device Recalls: An Application of Natural Language Processing and Statistical Learning .....	553
<i>Homa Alemzadeh, Raymond Hoagland, Zbigniew Kalbarczyk, and Ravishankar K. Iyer</i>	
Application of Python to AIMS Data to Analyze Intraoperative Hypotension through Pediatric Blood Pressure Curves .....	555
<i>Deepthi Shashidhar, Mingzhe Lin, Radoslav Ivanov, Insup Lee, Allan F. Simpao, Md. Arul Lingappan, Md. Jorge A. Galvez, Md. Pablo Laje, Md. Alan W. Flake, and Md. Mohamed A. Rehman</i>	
Creation of a Database Including a Set of Biological Features Related to Protein Sequences and Their Corresponding Alignment .....	557
<i>F. Ortuño, H. Pomares, I. Rojas, and O. Valenzuela</i>	
Lung Cancer Diagnosis via Interfacing Bio-nano-molecular System: hTERT, Chitosan, and Carbon Nanotubes .....	559
<i>Meenakshi Choudhary, Kavita Arora, Meenakshi Choudhary, and Satbir Kaur</i>	

Segmentation of Small Bowel Tumors in Wireless Capsule Endoscopy Using Level Set Method .....	562
<i>M. Alizadeh, H. Soltanian Zadeh, and O. Haji Maghsoudi</i>	
Simulation to Test Hard-Stop Implementation of a Pre-anesthetic Induction Checklist .....	564
<i>Douglas S. Wetmore, Md. Nishant A. Gandhi, Md. Christopher Curatolo, Md. Andrew Goldberg, Md. Patrick McCormick, Md. Adam Levine, and Md. Samuel Demaria</i>	
<b>Author Index</b> .....	566