

2010 IEEE/ICME International Conference on Complex Medical Engineering

(CME 2010)

**Gold Coast, Australia
13 – 15 July 2010**



**IEEE Catalog Number: CFP10CME-PRT
ISBN: 978-1-4244-6841-6**

Contents

Keynote

Frontiers in Neuromedical Engineering	1
---	---

Jinglong Wu, Jiajia Yang, Chunlin Li, Tianyi Yan, Haibo Wang and Xiujun Li

Complex Bioinformatics and Systems Biology

A Novel Type of Catheter Operating System with Force Monitoring	11
---	----

Nan Xiao, Jian Guo, Shuxiang Guo and Takashi Tamiya

On Relations between Genes and Metagenes Obtained via Gradient-Based Matrix Factorization .	17
---	----

Tian-Hsiang Huang, Vladimir Nikulin and Geoffrey J. McLachlan

Effects of the Local Skull and Spongiosum Conductivities on Realistic Head Modeling	23
---	----

Md Rezaul Bashar, Yan Li and Peng Wen

Analytic and numeric evaluation of EEG forward problem using spherical volume conductor models	28
--	----

Salman Shahid and Peng Wen

Analysis and classification of EEG signals using a hybrid clustering technique	34
--	----

Siuly Siuly, Yan Li and Peng Wen

Biomedical Image Processing I

A Efficient Mosaic Panorama Technique for Medical Video	40
---	----

ZHAO Xin-bo, ZOU Xiao-chun and ZHENG Jiang-bin

Comparison of Extended and Unscented Kalman Filters applied to EEG Signals	45
--	----

Janett Walters-Williams, Yan Li

Clustering Nuclei Using Machine Learning Techniques	52
---	----

Yu Peng, Mira Park, Min Xu, Suhuai Luo, Jesse S.Jin, Yue Cui, W. S. Felix Wong and Leonardo D. Santos

Medical Image Enhancement Based on Nonlinear Technique and Logarithmic Transform
--

Coefficient Histogram Matching	58
<i>Md. Foisal Hossain, Mohammad Reza Alsharif, and Katsumi Yamashita</i>	
Computer Aided Abnormality Detection for Microscopy Images of Cervical Tissue	63
<i>Yue Cui, Jesse S. Jin, Mira Park, Suhuai Luo, Min Xu, Yu Peng, W. S. Felix Wong and Leonardo D. Santos</i>	
Automatic cell segmentation in microscopic color images using ellipse fitting and watershed	69
<i>M. Park, J.S. Jin, Y. Peng, P. Summons, D. Yu, Y. Cui, S. Luo, F. Wang, L. Santos and M. Xu</i>	
 Cognitive Neuroscience and Technology	
Effects of Spatial Attention on Audiovisual Integration at an Incongruent Location	75
<i>Qi Li and Jinglong Wu</i>	
Real-time Decoding Algorithm in Brain Machine Interfaces	79
<i>Xiaoxiang Zheng, Qiaosheng Zhang, Shaomin Zhang, Yi Yu, Weidong Chen, Yao Zhao, Shuoxin Lin</i>	
Deriving difference between the Bayesian networks based patterns of the effective connectivity using permutation test in fMRI studies	85
<i>Rui Li, Kewei Chen, Juan Li, Adam S. Fleisher, Eric M. Reiman, Li Yao and Xia Wu</i>	
Functional Segregation of Memory Encoding and Retrieval in the Prefrontal Cortex	91
<i>Mi Li, Shengfu Lu, Yue Wu and Ning Zhong</i>	
A Self Assembled Real Time fMRI System	96
<i>Yi Li, Baoquan Xie, Li Yao and Xiaojie Zhao</i>	
Construction of Human Head Voxel Models from MR Images for EEG Analysis based on EM Algorithm	100
<i>Teruyoshi Sasayama, Tomoaki Iida, Takenori Oida, Shoji Hamada and Tetsuo Kobayashi</i>	
Wide-field Retinotopy Distinguish Subregions of the Human MT+ by functional Magnetic Resonance Imaging	106
<i>Tianyi Yan and Jinglong Wu</i>	

Development and Evaluation of Tactile Presentation Device for Japanese Katakana Cognitive Experiment	111
<i>Jiajia Yang, Suguru Yokotani and Jinglong Wu</i>	
Perception of Linear Self Motion under Different Visual Contrast Conditions for Development of Driving Simulator	115
<i>Yinghua Yu and Jinglong Wu</i>	
Basic Study on Individual Preference for Scents and the Arousal Level for Brain Activity Using MNIRS	119
<i>Shun'ichi Doi, Kousuke Kamesawa, Takahiro Wada, Eiji Kobayashi, Masayuki Karaki and Nozomu Mori</i>	
The Contribution of Bilateral Working Memory and Parietal activation in Audiovisual Voluntary Spatial and Temporal Attention	125
<i>Chunlin Li, Jinglong Wu, Hongbin Han and Dehua Chui</i>	
Chinese Character and Figure Cognitive Processing in the Left Broca Area on In-Bted Cortex ..	130
<i>Bin Wang, Tianyi Yan, Xiujun Li, Jinglong Wu and Qiyong Guo</i>	
Different Occipito-temporal Activations in Chinese Literate and Illiterate Subjects during Chinese Character Processing	134
<i>Ge-Qi Qi, Xiujun Li, Tianyi Yan, Jinglong Wu and Qiyong Guo</i>	
Human Higher Function and Early Detection of Dementia	
Parallel visual pathways and face perception	138
<i>Shozo Tobimatsu</i>	
Innovation for Visual Stimuli: From the Retina to Primary Visual Cortex	142
<i>Yoshinobu Goto, Takao Yamasaki and Shozo Tobimatsu</i>	
Memory Function in Patients with Parkinson's Disease or Subcortical Lacunar Infarcts Evaluated by Visual Event-related Potentials	146
<i>Hisao Tachibana, Toshiyuki Yamanishi, Makiko Hashimoto, Tomoko Oku, Daisuke Danno, and Keita Kawabata</i>	

Detailed Analysis of Orientation Preference Map in Visual Cortex	151
<i>Tsuyoshi Okamoto, Koji Ikezoe, Hiroshi Tamura, Masataka Watanabe and Kazuyuki Aihara</i>	

Neuroscience and Neural Technology

Application of Granger causality analysis to effective connectivity of the default-mode network.	156
<i>Xiaoyan Miao, Kewei Chen, Rui Li, Xiaotong Wen, Li Yao, and Xia Wu</i>	

Evaluation of Brain Aging by EEG Analysis of Photic Driving Response	161
<i>Tadanori Fukami, Takamasa Shimada, Fumito Ishikawa, Bunnoshin Ishikawa and Yoichi Saito</i>	

The Effect of using Elman-type Feedback SOM for Sleep Stage Diagnosis	165
<i>Takamasa Shimada, Kazuhiro Tamura, Tadanori Fukami and Yoichi Saito</i>	

Biomedical Robotics and Biomechatronics, Biosensors and Bio-analytics

Parameter Sensitivity Analysis of Surface Plasmon Resonance Biosensor through Numerical Simulation	171
<i>Md. Saiful Islam, Abbas Z. Kouzani, Xiu J. Dai and Wojtek P. Michalski</i>	

Effects of Design Parameters on Sensitivity of Microcantilever Biosensors	177
<i>Yang-Choon Lim, Abbas Z. Kouzani, Wei Duan and Akif Kaynak</i>	

Design and Construction of a Micropump for Drug Delivery Applications	182
<i>Abbas Z. Kouzani, Mile Ivankovic, Michael Fielding, Akif Kaynak, Chunhui Yang, Wei Duan, Eric J. Hu</i>	

Information and Communication Technology in Medicine

Temporal Interrelations of Bacteria Based on the Occurrence Time	188
<i>Kouichi Hirata, Kenichiro Motoyama, Shigeki Yokoyama and Kimiko Matsuoka</i>	

Aligned bipartite episodes between the genera of bacteria	193
<i>Takashi Katoh, Kouichi Hirata, Hiroki Arimura, Shigeki Yokoyama and Kimiko Matsuoka</i>	

Potential Effects of RFID systems on biotechnology insulin preparation: a study using HPLC and NMR spectroscopy	198
<i>R. Acierno, E. Carata, S.A. De Pascali, F.P. Fanizzi, M. Maffia, L. Mainetti, and L. Patrono</i>	
Evaluation of Different Database Designs for Integration of Heterogeneous Distributed Electronic Health Records	204
<i>Lars Frank and Stig Kjær Andersen</i>	
Motion Control of an Underwater Microrobot System in 3-D Space	210
<i>Shuxiang Guo and Baofeng Gao</i>	
A Hybrid Wired and Wireless Network Infrastructure to Improve the Productivity and Quality Care of Critical Medical Applications	215
<i>Hong Zhou, Hesham Ali, Jon (Jong-Hoon) Youn and Zhongwei Zhang</i>	
Optimal Choice of Test Signals for Channel Estimation	219
<i>Stephen Braithwaite and Ron Addie</i>	
An Analysis of Order Correction Factors by using a Term Extraction Method for Order Entry Sequences	226
<i>Hidenao Abe and Shusaku Tsumoto</i>	
Channel Based Simulation and Analysis of IEEE802.16 (WiMAX) –2004/WMAN-OFDM Physical Layer for BWA to Support Telemedicine	231
<i>Bikash C. Singh, M. Mahbubur Rahman, Tapan, K. Godder, Abu L. and Md. R. Bashar</i>	
Technology in Rehabilitation	
DEVELOPMENT OF A TELE- STETHOSCOPE: INDIAN PERSPECTIVE	237
<i>Prema Sankaran, K Chandrasekaran, Abdul Hafeez Baig and Chris Lynton Moll</i>	
Evaluation of Ambulatory ECG Sensors for A Clinical Trial on Outpatient Cardiac Rehabilitation	240
<i>Hang Ding, Antti Sarela, Richard Helmer, Michael Mestrovic and Mohan Karunanithi</i>	
Evaluation of Inertia Matching of Trans-Femoral Prosthesis based on Riemannian Distance	244
<i>Takahiro Wada, Toyokazu Takeuchi, Masahiro Sekimoto, Yuuki Shiba and Suguru Arimoto</i>	

Can a mobile phone be used as a pedometer in an outpatient cardiac rehabilitation program?	250
<i>Elsa Garcia, Hang Ding, Antti Sarela and Mohan Karunanithi</i>	

Sustainable Materials and Techniques in Medicine

De-Noising a Raw EEG Signal and Measuring Depth of Anaesthesia for General Anaesthesia	
Patients	254
<i>Tai Nguyen-Ky, Peng Wen, Yan Li and Robert Gray</i>	

Impact of Information Overload for Visual Search on Web Pages: An Eye-tracking Study	260
<i>Wanxuan Lu, Mi Li, Shengfu Lu, Yangyang Song, Jingjing Yin, and Ning Zhong</i>	

A novel attribute reduction algorithm based on peer-to-peer technique and rough set theory	265
<i>Guangzhi Ma, Yansheng Lu, Peng Wen and Engmin Song</i>	

Meta-analysis of Laparoscopic Posterior and Anterior Fundoplication for Gastro-Oesophageal Reflux Disease	270
<i>M. S. Subramanya, M. B. Hossain, S. Khan, B. Memon and M. A. Memon</i>	

A Novel Jellyfish-like Biomimetic Microrobot	277
<i>Liwei Shi, Shuxiang Guo and Kinji Asaka</i>	

Towards Health Data Stream Analytics	282
<i>Qing Zhang, Chaoyi Pang, Simon McBride, David Hansen, Charles Cheung and Michael Steyn</i>	

Carbon Nanotubes-Based Electrochemical Sensing for Cell Culture Monitoring	288
<i>Cristina Boero, Sandro Carrara, Giovanna Del Vecchioy, Giuseppe D. Albiniz, Laura Calz`a and Giovanni De Micheli</i>	

Depth of Anesthesia Control using Internal Model Control Techniques	294
<i>Shahab Anna Abdulla and Paul Wen</i>	

Biomedical Image Processing II

A Hybrid 3D Segmentation Approach for Vasculatures of CTA images	301
--	-----

Jing Guo, Tao Yang, Qin Li, Jian Yang and Yifan Huang

Identification of Sensitive Gait Parameters Responsive to Treatment in MS Patients 306
Jiping He, JiQing Zhang, Gang Qian and Dean Wingerchuk

Cooperative and Active Assistance based Interactive Therapy 311
Sivakumar Balasubramanian, Hang Zhang, Sharon Buchanan, Hiroko Austin, Richard Herman and Jiping He

A Novel Anatomical Structure Segmentation Method of CT Head Images 316
Xiaojun Zang, Jian Yang, Dongdong Weng, Yue Liu and Yongtian Wang

Cwj qt 'Kpf gz