

# **2012 5th International Conference on BioMedical Engineering and Informatics**

**(BMEI 2012)**

**Chongqing, China  
16 – 18 October 2012**

**Pages 1-776**



**IEEE Catalog Number: CFP1293D-PRT  
ISBN: 978-1-4673-1183-0**

# **BioMedical Engineering**

## **Biomedical Imaging**

A Backprojection Weight-based FDK Reconstruction Algorithm for Cone Beam Digital Subtraction Angiography  
*Hongcheng Yang, Xin Gao, Chuan Xu, Yun Teng, Yangchuan Liu, Yang Wang, Tao Zhang*.....1

A Novel Fuzzy Cognitive Map Based Method for the Differentiation of Intraductal Breast Lesions  
*Abdollah Amirkhani, Mohammad R Mosavi, Shahriar B Shokouhi, Fereshteh Mohammadizadeh*.....6

A Primal Dual Proximal Point Method of Chambolle-Pock Algorithms for l1-TV Minimization Problems in Image Reconstruction

*Yuchao Tang, Jigen Peng, Shigang Yue, Jiawei Xu*.....12

A Three-dimensional Visualization PACS Display System Integrated with HIS

*Hui Yu, Jinhang Li, Lixin Zhang, Zhiqiang Yu*.....17

Acceleration of Susceptibility Weighted Imaging Using Compressed Sensing

*Zhaoyang Jin, Qing-san Xiang, Yiping Du*.....22

Application of Partial-Echo Compressed Sensing in MR Angiography

*Zhaoyang Jin, Yiping P. Du*.....26

DWI Denoising Method Based on BEMD and Adaptive Wiener Filter

*Sanli Yi, Chao Zeng*.....30

Dynamic MR Imaging Reconstruction by Three-Dimensional Dictionary Learning

*Ying Song, Jun Zhao*.....35

Electromagnetic Brain Imaging Based on Standardized Resting-state Networks

*Xu Lei*.....40

Error analysis of SLM based micro stereo vision model

*Yongying Zhu, Zheng Xu, Wei Pei, Zije An*.....45

Experimental Study on the Truncated Long Code Sequence for Ultrasound Doppler Detection

*Zhengdi Qin, Deqing Liu, Siping Chen*.....50

High Resolution Magnetic Resonance Thermometry Based on the Partial Separable Function Model

*Yibiao Song, Caiyun Shi, Qiegen Liu, Yongqin Zhang, Xin Liu, Bensheng Qiu*.....53

High SNR Imaging of Cerebral Blood Flow Based on Anisotropic Diffusion

*Qi Zhang, Chendong Han, Peng Miao, Jun Jiang, Zhenguo Yan*.....58

Hyperspectral Imaging and Spectral-Spatial Classification For Cancer Detection

*Baowei Fei, Hamed Akbari, Luma V. Halig*.....62

Image Electrocardiography Based on a Cardiac Vector Projection Circle

*Shu-hua Guo, Huihua Kenny Chiang*.....65

Medical High-frequency Ultrasound Imaging using Golay-coded Pulse Excitation

*Sheng Zhou, Xiaochun Wang, Qingsheng Ye, Jun Yang, Jianjun Ji, Yanqun Wang*.....71

Microscopic Hyperspectral Imaging System Used in Rat Skin Analysis

*Qingli Li, Hongying Liu, Yiting Wang, Jianzhong Zhu, Li Chang*.....76

New Beamformers for Waveform Reconstruction of the Correlated EEG Sources

*Junpeng Zhang, Xuyang Huo*.....80

Quantitative Bioluminescence Tomography From Single View Measurement With Decay Correction Strategy Xiaowei He, Guohua Geng, Jingjing Yu.....	84
Research on Mouse Tissue Classification in Bioluminescence Tomography Forward Problem Wei Yang, Chunxiao Chen, Rui Wang, Qiuyi Wu, Ning Li.....	89
Ultrasound Heating Characteristic Evaluation for Change of Ultrasound Contrast Agent Construction Ratio and Ultrasound Input Intensity Jinsu Kim, Ju Young Kim, Hyun Du Jung, Jung Hwa, Si Cheol Noh.....	94
<b>Biomedical Visualization</b>	
3D Medical Image Segmentation Based on Active Contour Model Shuai Zhang, Yanjun Peng.....	98
Augmented Digitally Reconstructed Radiographs of Aortic Dissection CTA Images Christophe Lohou, Helene Feuillatre, Pawel Lubniewski, Nawel Fetnaci, Bruno Miguel, Laurent Sarry.....	103
Design and Implementation of Three Dimensional Visualization and Analysis System of Medical Images Xiang Gao, Cong Zhang, Wu Gao.....	108
Development of Stereo Camera Module Using WebCam for Navigation Transcranial Magnetic Stimulation System Sung-wook Shin, Seung-gi Kim, Young-heon Seo, Jae-yong An, Hyu-jeong Kim, Sung-taek Chung, Se-jin Yoon... 113	
Functional Cortical Mapping of Auditory Illusion: An fMRI Investigation of Ucale Illusio Li-qun Wang, Shinya Kuriki.....	117
<b>Biomedical Image Processing</b>	
A Combined Method for Automatic Identification of the Breast Boundary in Mammograms Zhili Chen, Reyer Zwiggelaar.....	121
A Comparative Analysis of Non Rigid Registration Methods in Atlas-Based Segmentation of Subcortical Structures Sahar Ahmad, Syed Sohaib Ali, Muhammad Faisal Khan.....	126
A Comparative Study of Assessment Methods for Medical Image Quality Junqing Liu, Jianfeng He, Honglei Chen, Lei Ma, Qian Zhang, Lipeng Pan.....	131
A feasibility study of early detection of lung cancer by saliva test using Surface Enhanced Raman Scattering Yan Wang, Zijian Cui, Yan Wang, Wenxin Zheng, Anyu Chen, Hong Wang, Xun Guo, Chunwei Liu..... 135	
A Fully Automated Scheme for Mass Detection and Segmentation in Mammograms Feng Liu, Fang Zhang, Zhulin Gong, Ying Chen, Weimin Chai.....	140
A New Framework for Medical Image Processing-medical Image Rrocessing with Imbra and CImg Guohua Chen, Donghai Zeng.....	145
A Normal method about Separating Leukocytes Based on Color Features Jianyong Cai, Man Yan, Jieying Gao, Youjia Chen, Weimin Chen, Qin Hong, Hua Zheng, Lili Luo..... 151	
A Novel Algorithm for License Plate Location Based on the RGB Features and the Texture Features Sheng-feng Yu, Zhi-jiang Xu, Biao-biao Zhang, Li-min Meng, K.-I. Du.....	156
A Novel Handwritten Signature Verification Method with Surface Desorption Atmospheric Pressure Chemical Ionization Mass Spectrometry Imaging Wenjun Zhang, Yali Liu, Huanwen Chen, Bin Jia, Liying Ding, Yali Liu..... 160	
A Novel Tool for Exocytosis Detection Based on PTrackII Han Wei Dan, Yuh Show Tsai, Chung Chih Lin.....	164

A Segmentation Method for Sub-solid Pulmonary Nodules Based on Fuzzy C-means Clustering <i>Shengdong Nie, Lihong Li, Yuanjun Wang, Chaofan He, Feng Ji, Jianmei Liang</i> .....	169
A Statistical Approach for Muscle Fascicle Orientation Estimation in Ultrasound Images <i>Qiaoliang Li, Xin Chen, Dong Ni, Siping Chen, Tianfu Wang</i> .....	173
A Video Capture and Processing System for Laryngoscope Diagnosis <i>Boyu Si, Lincan Zhou, Ning Li, Zhaoming Huang</i> .....	177
Action Recognition Based on Spatio-Temporal Interest Points <i>Yibo Li, Yuehan Kuai</i> .....	181
An Image Encryption Algorithm Based on Multi-Scroll Chaotic Map <i>Pengtao Zhao, Gang Liu, Minghao Wang, Jie Li Peng</i> .....	186
An Image-based Method for Quantification of Masseter Muscle Deformation <i>Yang Yang, Kelvin Weng Chiong Foong, Sim Heng Ong, Masakazu Yagi, Kenji Takada</i> .....	190
Analysis of Morphological Character and Technique of Parameter Extraction for Microscopic Pebrine Image <i>Xinyu Hu, Ronghong Chen, Daode Zhang, Guangyou Yang</i> .....	195
Analyzing the Intrinsic Relations between the Diffusion and Fluid Deformable Registration Methods <i>Xiang-bo Lin, Su Ruan</i> .....	200
Animated 3D Lung Surface Reconstruction from Asynchronous MR Image Sequences Based on Multiple Registration <i>Neylor Antunes Stevo, Toshiyuki Gotoh, Seiichiro Kagei, Tae Iwasawa, Marcos De Sales Guerra Tsuzuki</i> .....	204
Applying Spatial Covariance Modeling on Cortical Thickness Measurement <i>Lan Lin, Shuicai Wu</i> .....	209
Assessment of peristaltic movements of the intestine by the method of tracking of specific areas of the video obtained at surgery <i>Sokolov S.yu</i> .....	212
Automated detection of lung nodules in chest radiographs using a false-positive reduction scheme based on template matching <i>Ryoichi Nagata, Tsuyoshi Kawaguchi, Hidetoshi Miyake</i> .....	216
Automatic Human Spermatozoa Detection in Microscopic Video Streams Based On OpenCV <i>Qiaoliang Li, Xi Chen, Huisheng Zhang, Li Yin, Siping Chen, Tianfu Wang, Shumei Lin, Xinyu Liu, Xiaofei Zhang, Ruikai Zhang</i> .....	224
Automatic image-based 3D modeling for medical applications <i>Luigi Barazzetti, Marco Gianinetto, Marco Scaioni</i> .....	228
Automatic Rapid Optic Disc Detection From Infrared Radiation Retinal Fundus Images <i>Yuan Gao, Yan Sun, Minhua Xu</i> .....	233
Automatic Segmentation Framework for Primary Tumors From Brain MRIs Using Morphological Filtering Techniques <i>Ananda Resmi S, Tessamma Thomas</i> .....	238
Blur Detection in Fundus Images <i>Alexandra A. Chernomorets, Andrey S. Krylov</i> .....	243
Caveolae Image Analysis for Pathogen Diabetes <i>Jinshuo Liu, Qin Cao, Hui Wu, Yichun Gu, Mengfei Ren, Han Li, Baifang Zhang, Fons J. Verbeek</i> .....	247
Computed Tomography of Transverse Mesocolon:Involvement in Gastric Carcinoma <i>Peng Dong, Xi-zhen Wang, Jin Li, Hua-cheng Chen, Hang Jin</i> .....	251

Cytoplasm Image Classification Based on Kolmogorov Complexity <i>Xianglilan Zhang, Hongnan Wang, Tony J. Collins, Zhigang Luo, Ming Li</i> .....	256
Detecting Microtubules in High Noise Cryo-EM Micrograph <i>Yan Wen, Haibin Cai, Liyao Deng</i> .....	261
Experimental Study of Video Records Utilization for Hospital Service Management. When Do Outpatients Make Discomfort Gestures? <i>Keiko Shimazu, Kimihiko Ikeda, Masahiko Ito, Aya Onoe</i> .....	266
Face Feature Extraction and Recognition using Contourlet Transform and Coupled Subspace Analysis <i>Pingfeng Tang, Qu Gong, Lin Ni, Feifei Wang</i> .....	270
Global ICC-Based Eddy Current Correction in Diffusion Weighted Imaging <i>Kai Yu, Zhenming Yuan, Fei Dai, Dongrong Xu</i> .....	274
Human Body Detection and Tracking From Moving Cameras <i>Chunming Li, Yunfeng Xu, Xinnna Shi, Shaoguang Wu</i> .....	278
Illumination Invariant Face Recognition Based on ULBP and SVM <i>Quanbin Li, Chuanwei Sun, Jingao Liu</i> .....	282
Image Analysis Application to Determine Variations in Shape, Size and Color of Biological Structures. Determination of changes in size and color of the fruit of Solanum sp. in the process of maturation. <i>Fredy Andres Burbano Valdivieso, Jesus Daza</i> .....	286
Image Edge Enhancement and Segmentation via Randomized Shortest Paths <i>Ming Xu, Jun Wang, Zeyun Yu</i> .....	290
K-means Cluster Algorithm Based on Color Image Enhancement for Cell Segmentation <i>Yan Man, Cai Jianyong, Gao Jiebing, Luo Lili</i> .....	295
Local Optimal Threshold Segmentation and Reconstruction of Cerebrovascular MRA Images <i>Bianka Zhang, Zhengwei Xing, Jianfeng He, Sanli Yi, Lei Ma</i> .....	300
Longitudinal Change of the Grey Matter of Mild Cognitive Impairment Patients over 3 years by Using Voxel-Based Morphometry <i>Huifang Yang, Weifang Liu, Hong Xia, Zhen Zhou, Longzheng Tong</i> .....	304
Measurement of Fundus Vessel Diameter Based on Fundus Fluorescence Angiography Image <i>Yong-xin Guo, Lei Hu, Guang-yu Zhang, Di Chen, Yan-chun Li, Qing Jiao, Dong Cui</i> .....	309
Medical Image Denoising based on Adaptive Thresholding in Contourlet Domain <i>Majida Kazmi, Arshad Aziz, Pervaiz Akhtar, Aliza Maftun, Wasay Afaq</i> .....	313
MedIDEA - Medical Image Data Extraction and Analysis <i>Michal Kratochvil, Petr Vcelak, Jana Kleckova, Vladimir Rohan</i> .....	319
Osteosarcoma Segmentation in CT Images Based on Hybrid Relative Fuzzy Connectedness <i>Chunxiao Chen, Shaowei Ding, Qiuyi Wu, Ning Li, Sujia Wu</i> .....	324
Quantitative Measurement of Coronary Arterial Morphologic and Hemodynamic Parameters <i>Zheng Sun, Yi Dong</i> .....	329
Real-time Endpoint Detection of Upper Limb Movement Based on Energy Threshold and Residual Methods <i>Zhang Xu, Xu Chao</i> .....	334
Reconstruction And Noise Reduction of Time-domain Optical Coherence Tomography Signal Based on Wavelet-ridge <i>Xiaona Lin, Zhifang Li, Hui Li, Jianjun Li</i> .....	339

Registration of Cardiac Diffusion Tensor Images Using B-Spline Free-Form Deformation <i>Tao Wu, Ling Xia, Feng Yang</i> .....	344
Registration of Intracoronary Ultrasound Image Sequence <i>Zheng Sun, Bingru Liu</i> .....	348
Registration Of Multimodal And Temporal Images Of The Retina Using A Combined Feature-Based And Statistics-Based Method <i>Minhua Xu, Yan Sun</i> .....	353
Research of Dual-Model Recognition Algorithm Based on Finger Vein and Finger Crease <i>Fengxu Guan, Qiu-yu Wu, Zhi-chao Jiang, Ke-jun Wang</i> .....	358
Ribs Segmentation Based on Image Fusion and Wavelet De-noising <i>Wen-cheng Cui, Tian-shu Yu, Li-je Ren, Hong Shao</i> .....	362
Simulation-Based Analysis of the Effect of Hot Spot Size, Image SNR and Undersampling Scheme on Compressed Sensing Reconstruction of MR Temperature Images during HIFU Treatment <i>Wei-hao Chang, Ching Yao, San-chao Hwang, Hsu Chang</i> .....	367
Tensor Factorization-Based Classification of Alzheimer's Disease vs Healthy Controls <i>Wenlu Yang, Ying Cui</i> .....	371
Texture Analysis of Ultrasonic Liver Images Based on Wavelet Denoising and Histogram Equalization <i>Ruibo Zhang, Yali Huang, Zhen Zhao</i> .....	375
The Characteristics of Signal Contrast for The Focal Hepatic Masses with Multi-b DWI <i>Gang Guo, Liuhong Zhu, Zhengwen Sun, Weiqun Yang</i> .....	379
The Contourlet-based Structural Similarity for Image Quality Evaluation <i>Zhidan Yan, Junxiang Li, Chunmei Yang</i> .....	383
VBM analysis of white matter volume in children with ametropic amblyopia <i>Qinying Jiang, Qian Li, Mingxia Guo, Wei Han, Xiaohui Yin, Huilan Shi</i> .....	387
Visual Check and Automatic Compensation for Patient Movement During Image-Guided Abdominal Aortic Aneurysm (AAA) Stenting <i>Liang Du, Bo Ding, Shun Miao, Marcus Pfister, Rui Liao</i> .....	391
X-ray Image Enhancement Based on Fuzzy Sure Entropy in LabVIEW <i>Ce Li, Yannan Zhou, Chengsu Ouyang, Lihua Tian</i> .....	395
<b>Biomedical Signal Processing and Analysis</b>	
A Novel Method for Feature Extraction of Crackles in Lung Sound <i>Zhenzhen Li, Xiaoming Wu, Minghui Du</i> .....	399
A Novel Speech Coding Algorithm for Cochlear Implants <i>Hongyun Liu, Weidong Wang, Kaiyuan Li, Zhengbo Zhang</i> .....	403
A Real-Time Fetal ECG Feature Extraction Using Multiscale Discrete Wavelet Transform <i>Kamalakar Desai, Manoj Sankhe</i> .....	407
A Robust T-Wave Alternans Detection Algorithm Based on the Wavelet Transform and Bootstrap <i>Lihuang She, Mingquan Wang, Hongyan Wang, Shi Zhang</i> .....	413
Abnormality Diagnosis in ECG signal using Daubechies Wavelet <i>Kavya G, Thulasibai V</i> .....	418

An Adaptive Attitude Tracking Method Considering Acceleration And Magnetic Field Compensation <i>Tao Lu</i> .....	422
An ERP Research on the Cerebral Functional Regions Correlated to Stereoscopic Perception <i>Liang Chen, Yan Li, Fang Pu, Yang Yang, Shuyu Li, Deyu Li, Yubo Fan</i> .....	428
Analysing epileptic EEGs with a visibility graph algorithm <i>Guohun Zhu, Yan Li, Peng (paul) Wen</i> .....	432
Analysis and Processing of In-Vivo Neural Signal for Artifact Detection and Removal <i>Md Kafail Islam, Nguyen A. Tuan, Yin Zhou, Zhi Yang</i> .....	437
Analysis of Phasor Measurement Unit Signal in Wide Area Backup Protection System <i>Fengjie Sun, Min Zhang, Qi Qi, Jieqing Fan, Jingliang Qi, Kuo Zheng</i> .....	443
Application of SVD-based sparsity in Compressed Sensing Susceptibility Weighted Imaging <i>Wei Chen, Zhaoyang Jin, Feng Liu, Yiping P. Du</i> .....	447
Assessment of pain with mechanical nociceptive stimuli by the change of arterial wall impedance <i>Abdugheni Kutluk, Harutoyo Hirano, Ryuji Nakamura, Noboru Saeki, Masao Yoshizumi, Masashi Kawamoto, Murat Hamit, Toshio Tsuji</i> .....	451
Automatic Gain Control for Multi-channel Electrochemical Detection System Combining FPGA and FPAA <i>Xuhai Chen, Min Du</i> .....	455
Carrier Phase Recovery Method for Long Burst Linearly Modulated Signals <i>Feng Xu, Yu Wang, Lede Qiu</i> .....	460
Classifying Syndromes in Traditional Chinese Medicine Based on ISOMAP-SVM <i>Tao Liu, Chunming Xia, Yingqin Wang, Jin Xu</i> .....	464
Comparative Detection Based On Feature Extraction Of Epileptic Spike Waves In EEG <i>Xin Xu, Weixiang Shi, Yanting Hu, Jie Song, Bing Lv, Shancheng Yan</i> .....	469
Decreased EEG Phase Synchronization in the Elderly with Mild Cognitive Impairment <i>Tuo Yan, Ling Wei, Yingjie Li, Qing Xue, Yuping Wang</i> .....	473
Design and Implementation of Tactile Auditory Substitution System Based on Gammatone Filter <i>Jianguo Xing, Bing Xu, Ying Xue, Jixiang Zhu</i> .....	477
Does Alpha Brainwave Music Really Work? <i>Yan Li</i> .....	482
Driver 鈥檚 Attention during Monotonous Driving <i>Roman Moucek, Jan Rericha</i> .....	486
Drowsiness detection based on wavelet analysis of ECG and pulse signals <i>Aihua Zhang, Fenghua Liu</i> .....	491
EEG Eye Blink Artifact Removal by EOG Modeling and Kalman Filter <i>Hossein Shahabi, Sahar Moghimi, Hossein Zamiri-jafarian</i> .....	496
EEG Feature Extraction and Analysis under Drowsy State Based on Energy and Sample Entropy <i>Aihua Zhang, Yanfeng Chen</i> .....	501
EEG Feature Extraction and Pattern Recognition During Right and Left Hands Motor Imagery in Brain-Computer Interface <i>Cheng Liu, Hailing Wang, Hui Pu, Yi Zhang, Ling Zou</i> .....	506
EEG Theta-band Phase Synchronization During Electrical Acupuncture in Humans <i>Xiaoxia Li, Guizhi Xu, Xiukui Shang</i> .....	511

Effect of Balance Board Training on Lower Limb Muscle Activity <i>Ki-ho Song, Sung-wook Shin, Hyu-jeong Kim, Sung-taek Chung, Jae-yong An, Chang-joo Lim</i> .....	515
Effects of Voice Gender and Noise on Mandarin Tone Perception by Cochlear Implant Users <i>Meng Yuan, Haihong Feng</i> .....	519
Enhancement of Electrolarynx Speech Based on Perceptual Weighting <i>Ya Bai, Mingxi Wan, Supin Wang, Ya Bai</i> .....	524
Evaluation Method of Cockpit Display Interface Based on Situation Awareness <i>Qun Wang, Damin Zhuang, Hengyang Wei, Xiaoru Wanyan</i> .....	528
Fetal Heart Rate Analysis using a Non-linear Baseline and Variability Estimation Method <i>Shouyi Wei, Yaosheng Lu, Xiaolei Liu</i> .....	532
Gammatone Filterbank Based Energy Masking Algorithm for Active Hearing Protection System <i>Yi Jiang, Qingchun Wang, Yuanyuan Zu, Pengfei Ren, Liyuan Liu, Hong Zhou</i> .....	537
Higher Wavelet Entropy in the EEG with Mild Cognitive Impairment Patients <i>Ling Wei, Tuo Yan, Yingjie Li, Qing Xue, Yuping Wang</i> .....	541
Human Identification Using ECG Feature Extracted from Innovation Signal of Extended Kalman Filter <i>Naraghi Morteza Eahri Naraghi, Ali Almasi, Mohammad Bagher Shamsollahi</i> .....	545
Jensen-Shannon Divergence Analysis of Pathological Electrocardiogram <i>Yanting Hu, Huan Xu, Dong Hu, Jun Wang</i> .....	550
Measurement of Streaming Potentials in Bone Microchannels <i>Yihan Wang, Liyan Xu, Zhende Hou</i> .....	554
Multiscale Entropy Based Analysis of HRV During Sleep <i>Meng Xiao, Hong Yan, Xianglin Yang, Yanjun Li, Ruiyun Zhu</i> .....	558
On Relationship among Pulse, Electrocardiogram Signals and Drowsiness <i>Qi Wang</i> .....	563
On the Use of Instantaneous Mean Frequency Estimated from the Hilbert Spectrum of Facial Electromyography for Differentiating Core Affects <i>Jun-wen Tan, Adriano O. Andrade, Steffen Walter, Hang Li, David Hrabal, Stefanie Rukavina, Kerstin Limbrecht-ecklundt, Harald C. Traue</i> .....	568
Optimization of RS Error-Correcting Decoding Algorithm for QR Code-Verified in Android Phone <i>Chun Jin, Jianghong Yuan, Eryang Chen, Leilei Li, Gang Han, Tao Tang</i> .....	573
Prediction of Renal Transplant Rejection and Acute Tubular Necrosis in Renal Transplant Based on SVM <i>Xun Li, Yao Wang, Chengxuan Wang, Sanqing Hu, Ying Xu, Fei Han, Jianghua Chen</i> .....	577
Research on Peripheral Nerve Conduction Block by High Frequency Alternating Current Stimulation <i>Zhu Xiaojin, Xu Zhang, Wang Hui, Li Chunchan, Yan Lili</i> .....	582
Robust Adaptive Fetal Heart Rate Estimation for Single-channel Abdominal ECG Recording <i>Guojun Li, Xiaoping Zeng, Xiaona Zhou, Guojun Li, Qilie Liu</i> .....	587
Simultaneous Multicomponent Organic Compound Analysis Using two Intelligent Signal Processing Methods <i>Ling Gao, Shouxin Ren</i> .....	592
Small-world network organization of functional connectivity of EEG gamma oscillation during emotion-related processing <i>Manfang Ma, Yingjie Li, Zhenzhu Xu, Yingying Tang, Jijun Wang</i> .....	597

Studies on Vacuum Ultraviolet Spectra of Breast Tumor Tissues <i>Chenglin Liu, Xiaohua Wang, Xin-yi Zhang, Guo-bin Zhang</i> .....	601
The Event-Related Potential Data Processing Using ART 2 Network <i>Lukas Vareka, Pavel Mautner</i> .....	605
Three Nonlinear Parameters to Assess Autonomic Nervous System Function of Type 2 Diabetes Mellitus Patients with a Postural Change from Supineness to Standing <i>Cheng Lu, Xia Li, Haiying Quan</i> .....	610
Using ART2 for Clustering of Gabor Atoms Describing ERP P3 Waveforms <i>Tomas Rondik, Pavel Mautner</i> .....	614
<b>Biomedical Modeling and Simulations</b>	
A New Control Method of Heart Pump Drive System Based on Neural Network Control <i>Wu Wenjue, Wang Fangqun, He Weixing, Liu Lei, Wang Zhibing</i> .....	619
A Software to Generate Finite Element Meshes for Patient-specific Denture <i>Chenru Hao, Zhen Cai, Bing Han, Mingzheng Zhang, Yan Li, Fang Pu</i> .....	623
Cervical Spine Finite Element Modeling of a Sixyear-old Child <i>Siping Huang, Shuming Pan, Qirong Du, Hongyan Wang, Junyi Chen</i> .....	627
Evaluation of 3D Animated Human Model from 3D Scanner and Motion Capture to be used in Electromagnetic Simulator for Body-Centric System <i>S. Swaisaenyakorn, S.w. Kelly, P.r. Young, J.c. Batchelor</i> .....	632
Evaluation of 3D Correspondence Methods for Building Point Distribution Models of the Kidney <i>Guoyan Zheng, Zhi-cheng Li, Jia Gu</i> .....	637
Fatigue life analysis for butterfly-shaped cervical spine plates <i>Kai Ding, Kai Chen, Yonggui Lv, Yang Chen</i> .....	641
Modeling and Simulation for Clinical Trial of Naratriptan Based on Proportional Odds Model <i>He Sun, Xinling Shi, Jianhua Chen, Yajie Liu</i> .....	645
Novel nanoconcentrator for recovering viral particles of biomedical interest: design and simulation <i>Haakon Karlsen, Tao Dong</i> .....	649
Numerical Blood Flow Simulation with Predefined Artery Movement <i>Senol Piskin, M. Serdar Celebi</i> .....	654
Parameter estimation of an integrate-and-fire model based on symbolic analysis <i>Chong Chen, Zhuo Chen</i> .....	659
SAR Distribution of Microwave Antenna for Atrial Fibrillation Catheter Ablation <i>Huijuan Zhang, Qun Nan, Youjun Liu</i> .....	664
Study on the Matrix and Stress-strain Relationship of Laminated Structure in the Cranial Cavity with the Changing Intracranial Pressure <i>Yue Xianfang, Li Wang, Ruonan Wang, Hualin Yu</i> .....	668
The Simulation of the Relevance of Dose and Hill Coefficient to Drug Effect <i>Lei Zhao, Xinling Shi, Jianhua Chen, Yajie Liu, Lei Zhao, Yajie Liu</i> .....	674

## **Biomedical Effects of Electromagnetic Radiation**

A New Type of Excitation Coil for Measurement of Liver Iron Overload By Magnetic Induction Method

<i>Ziyi Zhang, Peiguo Liu, Liang Ding, Liang Zhang.....</i>	679
<b>Biomedical Instrumentation, Materials, Tissue Engineering, Artificial Organs, and Nano Technologies</b>	
1196-chamber Compatible LOC Device with Bubble Valves for Signaling Molecular Profiling in Blood <i>Xinyan Zhao, Tao Dong.....</i>	684
3-Dimensional Representation for PC12 Cell Growth Characterization <i>Yi-yu Lu, Yu-jie Huang, Kuo-sheng Cheng.....</i>	688
A high TCR material with Si1-xGex/Si MQWs for waterborne pathogen detection <i>Bo Jiang, Yan Su, Yong He, Tao Dong.....</i>	692
A New Trial towards the Development of Centrifugal Blood Pump for the Children with Cardiac Failure:Numerical Design and Evaluation of a Prototype <i>Lu Han, Jinlong Liu, Xiaoqing Yu, Ming Yang, Haibo Zhang, Wei Wang.....</i>	696
Accurate and Quantitative Studies on the MRS of Metabolite concentration of human brain using LCModel at 1.5T <i>Shaoqiang Xu, Shanshan Huo, Qingchun Qiu, Zhiwei Shen, Zhongxian Yang, Renhua Wu, Yaowen Chen.....</i>	701
Adhesion and spreading of different skeletal cell types on variable surface coatings <i>Mikko J. Lammi, Chengjuan Qu, Juha Prittinen, Arto Koistinen, Sami Myllymaa, Heikki Kroger, Reijo Lappalainen</i>	705
An Adaptive Vessel Closing Generator in Electrosurgery <i>Shengjie Yan, Yu Zhou, Wengdong Xu, Chengli Song.....</i>	711
Analysis of Functional Restoration of the Lower Urinary Tract after Spinal Cord Injury Using Functional Electrical Stimulation on Pudendal Nerve <i>Qian Dong, Guoqing Chen, Qingkai Liu, Zhaojun Ren, Dewu Yang, Nan Cui, Xiaojin Zhu, Xu Zhang.....</i>	716
Analysis of Three-Dimensional Maximum Likelihood Algorithm for Capsule Endoscopy Localization <i>Shen Li, Yishuang Geng, Jie He, Kaveh Pahlavan.....</i>	721
Cell-based Digital Microfluidic Chip for Drug Mixing and Droplets Generation: Design and Simulation <i>Tao Dong, Matteo Molino, Danilo Demarchi.....</i>	726
Coupling Enhancement of Printed Spiral Coils using Planar Ferrite for Biomedical Implants <i>Hao Jiang, Marcella Ramirez, Shiyu Zhou, Suxia Liang, Di Lan, Junmin Zhan, Ken Goldman, Shuvo Roy.....</i>	731
Design of a TDI CCD Data Acquisition System <i>Ran Yu, Youjun Liu, Jianrong Lu.....</i>	735
Design, fabrication and detection of an integration micorfluidic chip <i>Xing Chen, Dafu Cui, Lulu Zhang, Hui Li, Jianhai Sun.....</i>	739
Detection of Aluminum-Doped Zinc-Oxide Thin Films as electrode for radio frequency tissue fussion <i>Shengda Chen, Yu Zhou, Chengli Song, Lingxi Zhao, Wei Zhu, Wendong Xu, Shijun Bu.....</i>	743
Ergonomic Design and Evaluation of Visual Coding for Aircraft Head-up Display <i>Xu Xiao, Xiaoru Wanyan, Damin Zhuang, Zongmin Wei.....</i>	748
Experimental Study of Histotripsy in Ex Vivo Bovine Liver Tissue Exposed to Pulsed High Intensity Focused Ultrasound <i>Faqi Li, Huijian Ai, Mingsong Zhong, Zhibiao Wang, Qi Wang.....</i>	753
Low-temperature void-free wafer-level adhesive bonding for thin film transfer by nano-imprint resist <i>Fang Zhong, Tao Dong, He Yong, Su Yan.....</i>	757
Measurement System with Experiments for Galvanic Coupling Type Intra-Body Communication	

*Yueming Gao, Renjun Ma, Siohang Pun, Pengun Mak, Mangi Vai.....* 761

Noninvasive Test System of Hepatic Function

*Xiaofeng Zhang, Guangda Liu, Yang Jiao, Guozhong Xu.....* 765

Photoacoustic Doppler Flowmetry of Whole Blood by Pulsed Laser

*Tao Lu, Weisheng Wang, Huiyi Xu.....* 769

Quantum Dots-Based System for the Detection of Bacteria in Drinking Water

*Ping Li, Yonghua Xiong, Hua Wei, Weihua Lai, Lijun Wang, Wei Luo, Hengyi Xu.....* 772

The research of bio-inspired electromagnetic protection based on pulse coupled neural network

*Xiao Long Chang, Shang He Liu, Fang Fang Xie, Meng Hua Man.....* 777

## **Biomedical Robotics and Mechanics**

A Haptic Interface Robotic Measurement System for Breast Engorgement

*Tetsuya Mouri, Yoko Imada, Yasuhiko Ishigure, Haruhisa Kawasaki.....* 781

Biomechanics: Surface Electromyography Prosthesis Control

*Patrick Caldwell, Richard Al-bayaty, Chris Kellar, Il-seop Shin.....* 786

Residual Traveling Distance Estimation of An Electric Wheelchair

*Pei-chung Chen, Yong-fa Koh.....* 790

## **Rehabilitation Engineering**

Design and Development of a Prototype Rehabilitative Shoes and Spectacles for the Blind

*Ziad Abu-faraj, Elie Jabbour, Paul Ibrahim, Anthony Ghaoui.....* 795

Simulated Phosphene Model for Visual Prosthesis

*Ying Zhao, Kun Yang, Bo Pang, Yongji Wang, Qiushi Ren.....* 800

## **Wireless and Wearable Technologies in Healthcare Systems**

A GPRS-based Wearable Electronic Thermometric Alarm System

*Huisheng Zhang, Ruihai Zhang, Qiaoliang Li, Li Yin, Siping Chen, Tianfu Wang, Shumei Lin, Xinyu Liu, Xiaofei Zhang, Xi Chen* 804

A Matching Performance Study on IPI-Based Entity Identifiers for Body Sensor Network Security

*Shu-di Bao.....* 808

A Real-time Pulse Wave Detection Device Basing on Signal Envelope

*Hong Ming.....* 812

Improvement in the Image Transmission of the Mobile Digital C-Arm X-ray System in the Operating Room

*Hongchul Park, Segeyong Joo, Soojin Huh.....* 817

## **Biomedicine in Industry and Society**

Improving On-line Water Biological Toxicity Analyzer Based on Luminous Bacteria

*You-zhao Wang, Yi-min Yang, Jing Huang, Bo Zhang.....* 820

## **Other Topics in Biomedical Engineering**

Biomedical micro-refinery system for the enrichment of Giardia cysts in source water

*Nuno M.m.pires, Tao Dong.....* 825

Increasing the protozoan recovery for biomedical membrane filters using multiplexed refining device

*Nuno M.m.pires, Tao Dong.....* 830

Measurement and Analysis of Dynamic Distribution of Plantar Pressure

*Tiejun Tan.....* 835

Neuromuscular Electrical Stimulation Using Different Waveforms.Properties comparison by applying single pulese  
Mario A. Meza-cuevas, Dietmar Schroeder, Wolfgang H. Krautschneider.....840

## ***Bioinformatics, Systems Biology, and Medical Informatics***

### **Computational Genomics and Proteomics**

A New Algorithm for Predicting Protein Coding Regions Based on the Hybird Threshold  
Yu-tao Ma, Jin Che, Xiao-guang Lu, Jian-fu Teng, Li-yi Zhang.....846

A Novel Ensemble of Probabilistic Neural Network for Predicting Protein-Protein Interactions  
Yaou Zhao, Yuehui Chen, Mingyan Jiang.....850

An Improved Heuristic Algorithm for Founder Sequence Reconstruction from SNP Recombinants  
Jingli Wu, Hua Wang.....854

Analysis Of Synonymous Codon Usage In The Mfs\_1 Gene Of Riemerella Anatipestifer  
Xin Zhang, Anchun Cheng, Mingshu Wang, Dekang Zhu, Xiaojia Wang, Renyong Jia, Xiaoyue Chen.....859

Bioinformatic Characterization of epsA Gene from Riemerella anatipestifer  
Biao Yuan, Biao Yuan.....866

Comparison and analysis of models predicting transcriptional regulatory modules based on different backgrounds  
Huimin Li, Yu Shi, Dan Chen, Jun Hu.....872

Distribution of Nucleosome Binding Motifs Around the Functional Sites of Human Housekeeping Genes  
Tonglaga Bao, Hong Li, Xiaoqing Zhao.....876

Expression QTL and Genetic Regulatory Network Analysis of Col11a1  
Hong Lu, Huaijin Guan, Hui Chen, Lu Lu.....880

Fast Compression of Huge DNA Sequence Data  
Jichao Ouyang, Ping Feng, Jichang Kang.....885

GPU-Accelerated Burrow-Wheeler Transform for Genomic Data  
Zhiheng Zhao, Jianping Yin, Wei Xiong.....889

Next-generation sequencing data processing\_Analysis of unmapped reads and extremely high mapped peaks  
Jiao Chen, Zuolei Dai, Changchang Cao, Qianqian Zhang, Hongde Liu, Xiao Sun.....893

Peak Detection of Histone Modifications Based on ChIP-seq Data in Human Genome  
Haiying Zheng, Liping Zhang, Changgui Linghu, Juhua Zhang.....898

PISV: A Novel Algorithm for Peptide Identification Using Spectrum Vector  
Zhenhua Yu, Minghui Wang, Ao Li.....902

Predicting Binding Affinity Using Differential Evolution  
Chunyu Cong, Pingping Sun, Zhiqiang Ma.....906

Predicting 尾伪尾 Motifs Based on SVM by Using the ID and MS values  
Lixia Sun, Xiuzhen Hu, Shaobo Li.....910

Solving The Small Sample Size Problem In Protein Subcellular Localization Prediction  
Tong Wang, Xiaoxia Cao, Tian Xia, Zhizhen Yang.....915

The Analysis of Similarity for Promoter Sequence Structures in Yeast Genes  
Jun Hu, Xueyou Liang, Hongxia Zhao, Dan Chen.....919

## **Applications of Artificial Intelligence, Machine Learning and Data Mining in Bioinformatics and Medical Informatics**

A Bio-inspired Olfactory Model using Hierarchical Temporal Memory <i>Jianguo Xing, Tao Wang, Yang Leng, Jun Fu</i> .....	923
A Gene Signature for Breast Cancer Prognosis Using Support Vector Machine <i>Xiaoyi Xu, Ya Zhang, Liang Zou, Minghui Wang, Ao Li</i> .....	928
A Hybrid Evolutionary Algorithm for Promoter Recognition <i>Lan Tao, Ning Fan, Zexuan Zhu</i> .....	932
A Method of QRS Complex Detection Using Multi-Scale Mathematical Morphology <i>Arata Andrade Saraiva, Silvio Tacara, Mikhail Anatoly Koslowski, Humberto Remigio Gamba, Gustavo Benvenutti Borba, Miguel Antonio Sovierzoski</i> .....	936
A New Boolean Logic Algorithm for DNA Sequence Alignment <i>Xin Ye, Ping Feng, Jichang Kang</i> .....	941
A Novel Rule Infusion Technique for Generating Simulated Binary Data to Validate Data Mining Methods <i>Mohammad-reza Siadat, Douglas Craig, Gregory F Hickman, Theophilus Ogunyemi, Ananias Diokno</i> .....	945
Agent Based Interoperability in Hospital Information Systems <i>Miguel Miranda, Gabriel Pontes, Antonio Abelha, Jose Neves, Jose Machado</i> .....	949
Application of Data Mining Techniques in Sports Training <i>Yingying Li, Yimin Zhang</i> .....	954
Classification analysis of DNA sequences based on Inverse Sequence Frequency <i>Kaizhong Jiang, Zhongtuan Zheng, Yingping Hong, Lu Li</i> .....	959
Construction and Analysis of Human Phosphorylation Network <i>Chen Peng, Liang Zou, Minghui Wang, Ao Li</i> .....	964
Drug Use Model Investigation Based On BP Neural Network and Decision Tree <i>Xudong Wu, Bingxiang Liu</i> .....	968
Particle Swarm Optimization-Based Wavelet Packet Regression for Multivariate Analysis of Near-Infrared Spectroscopy <i>Dan Peng, Qingchen Nie, Yanlan Bi, Wei Liu</i> .....	971
Predicting Prostate Cancer Progression with Penalized Logistic Regression Model Based on Co-expressed Genes <i>Hongya Zhao, Songru Qi, Dong Qi</i> .....	976
Predicting RNA-Protein Interactions Using A Novel Method <i>Tong Wang, Hongmei Li, Xiaoming Hu, Xiaoxia Cao</i> .....	981
Prediction of Protein Kinase-Specific Phosphorylation Sites Using Random Forest Algorithm <i>Wenwen Fan, Liang Zou, Ao Li, Minghui Wang</i> .....	986
Skip Pattern Analysis for Stratification and Detection of Undetermined and Inconsistent Data <i>Suzan Arslanturk, Mohammad Reza Siadat, Theophilus Ogunyemi, Kerima Demirovic, Ananias Diokno</i> .....	990
Sleep-Wake Stages Classification Based on Heart Rate Variability <i>Hayet Werteni, Slim Yacoub</i> .....	996
Statistical Classification Based on SVM for Raman Spectra Discrimination of Nasopharyngeal Carcinoma Cell <i>Guannan Chen, Hengyang Hu, Rong Chen, Daner Xu</i> .....	1000

## **Computer-Aided Drug Design**

## **Biological System Dynamics and Simulations**

A Ripple-Spreading Network Model for the Study of Infectious Disease Transmission  
*Jian-qin Liao, Xiao-bing Hu, Ming Wan, Mark S Leeson, Evor L Hines.....1004*

A Top-down Attention Model Based on the Semi-supervised Learning  
*Jiawei Xu, Shigang Yue.....1011*

Competitive Behaviors of A Spiking Neural Network with Spike Timing Dependent Plasticity  
*Chengmei Ruan, Qingxiang Wu, Lijuan Fan, Zhiqiang Zhuo, Xiaowei Wang.....1015*

Input Optimal Control Strategy for the Desynchronization of Coupled Neurons  
*Xile Wei, Nan Chen, Meili Lu, Bin Deng, Jiang Wang, Yanqiu Che, Chunxiao Han.....1020*

Modelling of the Blood Pressure Regulation in Rats  
*Ivan Sekaj, Josef Zicha, Michal Behuliak, Peter Balis, Iveta Bernatova.....1025*

Scale invariance of morphogen-mediated patterning by flux optimization  
*David M. Umulis, Hans G. Othmer.....1030*

## **Healthcare Information Systems**

A WYSIWYG Template Designer for Medical Report Systems  
*Lin Yin, Jiye An, Xudong Lu, Hui long Duan.....1035*

An Electronic Medical Records Review System for Mobile Healthcare based on Web Services  
*Yuanli Wu, Hongqiao Yang.....1040*

An Extensible HL7 Middleware for Heterogeneous Healthcare Information Exchange  
*Lijun Liu, Qingsong Huang.....1045*

An Optimized Framework for Integrated Visualization of Distributed Medical Images  
*Zhengang Fan, Jiquan Liu, Ziming Yin, Hui long Duan.....1049*

Analytic Tools and Workflows for EEG/ERP Domain  
*Jan Stebetak, Roman Moucek.....1054*

Clinical motion tracking and motion analysis during ophthalmology surgery using electromagnetic tracking system  
*M. Ali Nasseri, E. C. Dean, Suraj Nair, Martin Eder, Alois Knoll, Mathias Maier, Chris.p Lohmann.....1058*

Design and Implementation of A Multi-Channel Pulse Signal Acquisition System  
*Peng Wang, Wangmeng Zuo, Hongzhi Zhang, David Zhang.....1063*

Design of Service Registry for Interoperable Medical Information System  
*Long Guo, Xiao-guang Zhang, Yu Wang, Peng-fei Li, Jing-song Li.....1068*

Diagnosis of Parkinson病 Disease Using Genetic Algorithm and Support Vector Machine with Acoustic Characteristics  
*Hanguang Xiao.....1072*

Ergonomics Study of Information Coding of Cockpit Display under Certain Ambient Illumination  
*Xu Wu, Xiaoru Wanyan, Damin Zhuang, Yingwei Zhou.....1077*

Estimating Sleep Cycle Using Body Movement Density  
*Yuta Kambayashi, Hiroshi Hagiwara.....1081*

Fundamental Study to New Assist system for Wheel Chair based on Brain Activity during Car Driving  
*Shunji Shimizu, Hiroaki Inoue, Hiroyuki Nara, Takahashi Noboru, Fumikazu Miwakeichi, Nobuhide Hirai, Senichiro Kikuchi, Eiju Watanabe, Satoshi Kato1086*

Interactive Biking Exercise (iBikE) Platform to Facilitate Lower Extremity Cycling Exercise.system design and feasibility

<i>In Cheol Jeong, Joseph Finkelstein.....</i>	1091
Introducing Physical Telerehabilitation in Seniors with Mobility Limitation.System feasibility and acceptance <i>Jeffrey Wood, Mark Finkelstein, Eunme Cha, Joseph Finkelstein.....</i>	1096
Portal for Research in Electrophysiology - Data Integration with Neuroscience Information Framework <i>Petr Bruha, Roman Moucek.....</i>	1099
Radiological Informatics in Breast Screening: towards improved radiologists' performance <i>Alastair Gale, Yan Chen.....</i>	1104
Remote Heart Sound and Lung Sound Monitoring System Design Based On ZigBee <i>Yi Zhang, Sixuan Chen, Jin Wu, Yuan Luo.....</i>	1108
Resource Allocation in Hierarchical Distributed EHR System based on Improved Poly-Particle Swarm <i>Chunzhong Xia, Shunlin Song.....</i>	1112
Sitting Posture Detection And Recognition Using Force Sensor <i>Yong-ren Huang, Xu-feng Ouyang.....</i>	1117
Skip Pattern Analysis for Detection of Undetermined and Inconsistent Data <i>Suzan Arslanturk, Mohammad-reza Siadat, Theophilus Ogunyemi, Kerima Demirovic, Ananias Diokno.....</i>	1122
Skip Pattern Analysis of the MESA Data for Stratification <i>Suzan Arslanturk, Mohammad-reza Siadat, Theophilus Ogunyemi, Kerima Demirovic, Ananias Diokno.....</i>	1127
<b>Other Topics in Bioinformatics, Systems Biology, and Medical Informatics</b>	
A comparison of contributions to disease phenotype between damaging and benign non-synonymous SNPs <i>Lin Hua, Zheng Yang, Hong Liu.....</i>	1133
Analysis of Synonymous Codon Usage in the Cas1 Gene of Riemerella Anatipestifer <i>Yang He, Anchun Cheng, Mingshu Wang.....</i>	1138
Analysis of Synonymous Codon Usage in the Outer Membrane Efflux Protein Gene of Riemerella Anatipestifer <i>Dandan Shen, Anchun Cheng, Mingshu Wang.....</i>	1147
Analysis of Synonymous Codon Usage in the UL41 Gene of Duck Plague Virus <i>Xuelian Cao, Anchun Cheng, Mingshu Wang.....</i>	1153
Analysis of Synonymous Codon Usage on the Small Subunit of Ribonucleotide Reductase Gene from Duck Plague Virus <i>Min Wei, Anchun Cheng, Mingshu Wang, Jie Huang, Xiaoyue Chen.....</i>	1159
Bioinformatics Analysis of Surface Antigen D15 Protein Encoded by the D15 Gene of Riemerella Anatipestifer <i>Bin Feng, Anchun Cheng, Mingshu Wang.....</i>	1165
Bioinformatics Analysis of the Complete Nucleotide Sequence of the Riemerella Anatipestifer D15 Gene <i>Bin Feng, Anchun Cheng, Mingshu Wang.....</i>	1171
Characterization For Mfs_1 Gene From Riemerella Anatipestifer By Bioinformatics Analysis <i>Xin Zhang, Anchun Cheng, Mingshu Wang.....</i>	1176
Characterization of Codon Usage Bias in the US10 Gene of Duck Enteritis Virus <i>Maoyin Lai, Anchun Cheng, Mingshu Wang, Renyong Jia, Dekang Zhu.....</i>	1181
Detect adverse drug reactions for the drug Pravastatin <i>Yihui Liu, Aickelin Uwe.....</i>	1188
Explore coronary artery disease related microRNA clusters by combining single nucleotide polymorphisms with microRNA microarray	

<i>Lin Hua, Zheng Yang, Hong Liu.....</i>	1193
<b>Identifying Protein Submitochondrial Location by using Features of Sequence</b> <i>Fengmin Li, Huanmin Zhou.....</i>	1198
<b>Meta-analysis Of Association Between SLC30A8 rs13266634 And T2DM In Chinese Population</b> <i>Qin Huang, Minghua Dong, Shumei Li, Qin Wu.....</i>	1202
<b>Molecular Analysis of the Duck Plague Virus US10 Gene and its Encoding Protein</b> <i>Maoyin Lai, Anchun Cheng, Mingshu Wang, Renyong Jia, Dekang Zhu.....</i>	1206
<b>Operational Research of Workload Using Time and Motion of Health Wworkers in Kerala</b> <i>Srinivasan Kannan, P.sankara Sarma.....</i>	1213
<b>Sequence Analysis of the OmpA/MotB Gene From Riemerella Anatipestifer by Bioinformatics</b> <i>Pan Xu, Dekang Zhu, Xiaoja Wang, Xiaoyue Chen, Anchun Cheng, Mingshu Wang.....</i>	1217

## ***Informatics: Fundamental Technologies Important to Medicine and Biology***

### **Automation, Robotics, and Control**

A combined multiple sliding mode and backstepping design to robust adaptive neural control for uncertain nonlinear systems <i>Dong Liu, Pengsong Yang, Jie Wu.....</i>	1221
A Simple Stability Condition and Decay Rate Estimation of Time-Delay Systems <i>Chien-hua Lee, Cheng-yi Chen.....</i>	1227
Adaptive Synchronization on Complex Dynamical Networks <i>Yong-chun Liu, Da Lin.....</i>	1232

Fusion of ART-1and Advanced Logistic Belief Neural Network for Object Grasping Robot Arm <i>Zacharie Mbaitiga.....</i>	1236
---	------

Improved Feedback Control System of Unstable Gas-Lift Wells <i>Jun Ni, Zhanli Ren, Fengying Mao.....</i>	1240
---	------

Robust Stability Analysis of Discrete Time-Delay Systems Subjected to Nonlinear Uncertainties <i>Chien-hua Lee, Cheng-yi Chen.....</i>	1245
---	------

### **Data Mining and Database Systems**

Building Text Hierarchical Structure By Using Confusion Matrix <i>Yunbo Xiong.....</i>	1250
---	------

Efficient Schema Extraction from Large XML Documents <i>Yin Zhang, Hua Zhou, Junhui Liu, Zhihong Liang, Peng Duan.....</i>	1255
---	------

Enhancement of K-nearest Neighbor Algorithm Based on Weighted Entropy of Attribute Value <i>Xiao Xingjiang, Ding Huafeng.....</i>	1261
--	------

L2-Loss Twin Support Vector Machine for Classification <i>Bin-bin Gao, Jian-jun Wang, Hua Huang.....</i>	1265
---	------

MetaMed - Medical Meta Data Extraction and Manipulation Tool Used in the Semantically Interoperable Research Information System <i>Petr Vcelak, Michal Kratochvil, Jana Kleckova, Vladimir Rohan.....</i>	1270
--	------

Model of Storage of ERP Protocols in EEG/ERP Portal
---

Vaclav Papez, Roman Moucek.....	1275
Ontology Development in EEG/ERP Portal Petr Jezek, Roman Moucek.....	1280
Prediction and Analysis of the Human Errors in the Aircraft Cockpit Zongmin Wei, Damin Zhuang, Xiaoru Wanyan, Hengyang Wei, Yingwei Zhou.....	1285
Step Towards Fault Forecasting in Hospital Information Systems Paulo Silva, Cesar Quintasy, Stantosz Manuel, Antonio Abelhax, Jose Machado.....	1289
The Application of Pattern Recognition Technology in Traditional Chinese Medicine Changjiang Long, Peng Wan.....	1295
<b>Computer Security and Privacy</b>	
An RSA Encryption Implementation Method Using Residue Signed-Digit Arithmetic Circuits Shugang Wei.....	1299
Automatic Instruction-level Recovery By Duplicated Instructions and Checkpointing Tan Lanfang, Tan Qingping, Xu Jianjun.....	1304
Evaluation of ECG Random Number Generator for Wireless Body Sensor Networks Security Xin Chen, Yongxiang Zhang, Guanghe Zhang, Yuanting Zhang.....	1308
Fuzzy identity-based threshold signature scheme based on bilinear maps Changji Wang, Jung-tae Kim.....	1312
Hardware implementation of SHA-3 candidate Based on BLAKE-32 Zhenglin Liu, Xin Dong, Yizhi Zhao, Dongfang Li.....	1317
Security Issues in Cloud Computing Mutum Zico Meetei, Anita Goel.....	1321
<b>Software Engineering</b>	
Aspect-Oriented Software for Testability Mutum Zico Meetei.....	1326
<b>Distributed Systems, Computer Architecture and Hardware</b>	
A 16-bit Carry Skip Adder Designed by Reversible Logic Yu Pang, Junchao Wang, Shaoquan Wang.....	1332
A Tri-level Parallel Architecture for NAND Flash Storage System Guojie Qin, Min Xie, Guoman Liu, Long Jiao, Boxiang Zhou.....	1336
Domain Based Analysis of Messaging Patterns in Service-Oriented Architecture Andleeb Shahnaz, Tayyaba Nafees, Farooque Azam.....	1341
Fine-Grained Data Integrity Check for Power Cloud Computing Yun Yang, Lie Wu, Yulin Yan, Cong Xu.....	1346
Synthesis, Properties and Application in Optical Memory of A Photochromic Diarylethene Bearing Pyrimidine Ring Ming Liu, Long Liang, Gang Liu, Shiqiang Cui.....	1351
The Era of Cloud Computer.thru Bio-Detecting and Open-Resources to Achieve the Ubiquitous Devices Chih-chin Yang, Jung-tang Huang.....	1355
The Parallel Generation of 2-D Hilbert Space-filling Curve on GPU Chunsheng Feng, Shi Shu, Junxian Wang, Zheng Li.....	1359

## **Computer Applications**

A Novel Design of Low Power Double Edge-Triggered Flip-Flop

*Chien-cheng Yu, Kuan-ting Chen*.....1363

Effective Connectivity Analysis of fMRI Time-series based on Granger Causality and Complex Network

*Zhuqing Jiao, Ling Zou, Nong Qian, Zhenghua Ma*.....1367

The Model for Emergency Resource Dispatch Based on Requirement of Disasters $\leftarrow$ Unit

*Fu-ping Yang, Hao Zhang*.....1371

Transplantation Research of The LwIP Agreement Under The uC/OS-II

*Jinjian Jiang*.....1376

## **Computer Communications and Networking**

A Cross-layer Based TDMA Protocol for Wireless Biomedical Sensor Networks

*Qingjin Zeng, Ke Zhang, Zeyang Wang*.....1380

A Cross-Layer Energy-Balanced Bidirectional Minimum Hop Routing Algorithm for WSNs

*Zhi Ren, Zhonghao Xu, Jianlin Cao, Qianbin Chen*.....1384

A Downlink Scheduling Based on Queue Length Estimation for VoIP in WiMAX Networks

*Chin-ling Chen, Cheng-yi Pan*.....1389

A Lightweight and Scalable Key Management Scheme for Heterogeneous Sensor Networks

*Yanbing Liu, Yulin Yan*.....1393

A New GTS Allocation Schemes For IEEE 802.15.4

*Lu Yang, Shen Zeng*.....1398

A New Look-up-table based Adaptive Baseband Predistorter

*Lei Yang, Shouqing Qi, Ya Lin, Yuqiang Cao*.....1402

A New Topology Design and Performance Analysis for FC-AE Based on PON

*Cong-cong Li, Tao Zhou*.....1406

A Novel Hysteretic Noisy Chaotic Neural Network and Its Application to TDMA Broadcast Scheduling

*Ming Sun, Yanjun Zhao, Wei Cao, Yandong Li*.....1411

A Proposal of Next Generation Network: QoS Mapping for MPLS-DiffServ and Label Forwarding

*Chin-ling Chen*.....1416

A QoE-Aware Mobile Web Middleware for Multimedia Service

*Xiang Liu, Jie Shen*.....1420

Absolute Calibration Algorithm of RDSS Channel Based on Software Defined Receiver

*Xiaozhun Cui, Hong Mi, Yonjun Fan, Xin Nie, Wenyu Hao*.....1424

An Accurate Ranging Algorithm of Symmetrical Triangle Linear Frequency Modulation Continuous Wave Radio Detector

*Xiaorong Lin, Xinhong Hao, Ping Li*.....1428

An Early Stopping Criterion for LDPC Decoder Based on CMMB Standard

*Jun Wang, Jing He, Xinyu Xu*.....1432

Analysis and Comparison of Two Clipping Methods in PAPR Reduction for OFDM System

*Liang Yao, Jing He, Xinyu Xu*.....1435

Design and Test of RLC Sub-layer Multi-instance Mode in Long Term Evolution System

Fatang Chen, Qin Tuo, Zhongjun Jiang.....	1439
Directional Constant Beamwidth Beamforming by Second Order Cone Programming Constraints Jing-xiang Yin.....	1443
Distributed Processing of Mass Cognitive Information Based on Cognitive Engine Framework Dan Ye, Yi-ming Wang.....	1446
Dynamic Contention Windows Adjustment Based on the Average Number of Consecutive Idle Slots Qin Yu, Yiqun Zhuang, Lixiang Ma, Yuming Mao.....	1451
Estimating Network Path Loss Episode Frequency by Passive Measurement Hua Wu, Jian Gong, Ziyu Ma.....	1457
Fast-varying Channel Estimation method Based on Basis Expansion Models in IEEE802.16e Systems Wang Yi, Wang Xiangyu, Long Ken.....	1462
Fault Detection Method Based on the Minimum-Length Probe Cycle Cover Algorithm in Optical Burst Switching Network Songjian Bao, Yanying Xu, Qiang Li.....	1467
Metric-based PRT Set Selection in Tone Reservation Scheme for PAPR Reduction in OFDM Systmes Weiwei Fang, Naiqian Zhang.....	1472
Modeling and Simulations of ECCM of Ocean Surveillance Satellite Electronic Intelligence Xianjun Pan, Yanhong Wu.....	1476
Optimal user pairing in downlink MU-MIMO with Correlation Method Jean-baptiste Yamindi, Hong Ji, Muqing Wu.....	1481
Performance of Improved SLM Method under Multipath Fading Channel in OFDM Systems Ken Long, Qiao Liu, Yi Wang.....	1486
Phase-Locked Loop of Inverter Based on FPGA Shuhong Li, Yueqing Zhou.....	1490
Physical Downlink Control Channel Format Selection of evolved Node B in Long Term Evolution System Jia Luo, Xiaowen Li.....	1494
Recoverable Concealed Data Aggregation for Privacy Preserving in Wireless Sensor Networks Dapeng Wu, Jichao Tang, Qingwen Sun, Ruyan Wang.....	1499
Reflection Routing based on Contending Burst Copying for Optical Burst Switched Networks Sheng Huang, Gen Li, Xiong Wang, Xiaofei Yang.....	1503
Research on passive meander-lined Radio Frequency Identification tag antenna on Ultrahigh Frequency Zongjian He, Guohua Zhan, Zhihua Li.....	1507
Research on the Tag Estimation and Frame Length of the ALOHA Algorithm Zheng-wu Yuan, Li-dan Duan.....	1511
Risk-aware Vertical Handoff Algorithm for Security Access Support in Heterogeneous Wireless Networks Bin Ma, Xiaofeng Liao, Xianzhong Xie.....	1515
Study on Intelligent Channel Switching System Based on Transmission Delay Equalization Method for Differential Protection Communication Ding Ding, Qun Jiao.....	1520
The Contradiction Between Channel Estimation and PAPR Performance in Cyclic Shift PTS Ken Long, Yue Fu, Yi Wang.....	1525

The Design of Embedded 3G Gateway for Internet of Things <i>Yi Zhang, Pengbo Yang, Zichao Ma, Yueting Zhang</i> .....	1529
The research of the key technology on Automatic Identification System Core Chips <i>Xiaoye Wang, Shufang Zhang</i> .....	1533
<b>Intelligent Systems</b>	
A New Ship-borne Integrated Automatic Identification System <i>Xiao Zhang, Qing Hu</i> .....	1538
A Novel Fuzzy Support Vector Machine based on the Confidence <i>Sidong Xian, Jie Xia, Dong Qiu, Yonghong Li</i> .....	1542
A Novel Sparse Least-Squares Support Vector Machine <i>Xiao-lei Xia</i> .....	1547
An application of Genetic Fuzzy System to improve the Random Exponential Marking algorithm in Active Queue Management <i>Huy Nguyen Phuong, Dung Le Ba</i> .....	1552
Automatic Clustering using Particle Swarm Optimization with Various Validity Indices <i>Chih-wei Wang, Jen-ing G. Hwang</i> .....	1557
Bayesian filtering for stochastic dynamical systems via Markov Chain Monte Carlo <i>Meng Gao, Xinghua Chang, Xinxiu Wang</i> .....	1562
Discrete Portfolio Optimisation for Large Scale Systematic Trading Applications <i>Aistis Raudys, Zidrina Pabarskaite</i> .....	1566
Parallel Implementation of Neural Networks Training on Graphic Processing Unit <i>Yong Liu, Yeming Xiao, Li Wang, Jielin Pan, Yonghong Yan</i> .....	1571
Remaining Useful Life Prognosis of Bearing based on Gauss Process Regression <i>Sheng Hong, Zheng Zhou</i> .....	1575
Three-Layer Information Fusion for Braking System Fault Diagnosis <i>Shaojin Wang, Zhaojian Yang, Jian Wang, Gaofeng Song</i> .....	1580
Topological Structure of Rough Sets in Reflexive and Transitive Relations <i>Quanxi Qiao</i> .....	1585
View Independent Human Posture Identification using Kinect <i>Yuanning Liu, Zequn Zhang, Ao Li, Minghui Wang</i> .....	1590
Yearly Cluster Analysis of Dow Jones 30 from 2006-2009 Based on Extreme Point Distance <i>Ling Xiang, Yunfeng Chang, Yuanchao Liu, Daochao Tang</i> .....	1594

## **Other Topics in Informatics**

The Effect of Squarewave Stretching on Apoptosis of Human Oral Squamous Cell Carcinoma KB Cells <i>Hua Qu, Peng Gao</i> .....	1598
--	------