## Table of Contents

## Feature Extraction and Classification

Fiber Segmentation Using Constrained Clustering Daniel Duarte Abdala and Xiaoyi Jiang	1
A New Multi-Task Learning Technique to Predict Classification of Leukemia and Prostate Cancer Austin H. Chen and Zone-Wei Huang	11
A Benchmark for Geometric Facial Beauty Study Fangmei Chen and David Zhang	21
An Effective Feature Extraction Method Used in Breath Analysis Haifen Chen, Guangming Lu, Dongmin Guo, and David Zhang	33
Classification of Diabetics with Various Degrees of Autonomic Neuropathy Based on Linear and Nonlinear Features Using Support Vector Machine	42
Diabetes Identification and Classification by Means of a Breath Analysis System Dongmin Guo, David Zhang, Naimin Li, Lei Zhang, and Jianhua Yang	52
Automatic Measurement of Vertical Cup-to-Disc Ratio on Retinal Fundus Images	64
Tongue Image Identification System on Congestion of Fungiform   Papillae (CFP)   Bo Huang and Naimin Li	73
Newborn Footprint Recognition Using Band-Limited Phase-Only Correlation Wei Jia, Rong-Xiang Hu, Jie Gui, and Ying-Ke Lei	83
Radii Solaris Extraction through Primitive Modelling Wang Junhui, Ma Lin, Wang Kuanquan, and Li Naimin	94
A DIAMOND Method for Classifying Biological Data Han-Lin Li, Yao-Huei Huang, and Ming-Hsien Chen	104



Tongue Image Texture Segmentation Based on Gabor Filter Plus Normalized Cut	115
Jianfeng Li, Jinhuan Shi, Hongzhi Zhang, Yanlai Li, Naimin Li, and Changming Liu	
Chaos Synchronization Detector Combining Radial Basis Network for Estimation of Lower Limb Peripheral Vascular Occlusive Disease Chia-Hung Lin, Yung-Fu Chen, Yi-Chun Du, Jian-Xing Wu, and Tainsong Chen	126
Classification of Wrist Pulse Blood Flow Signal Using Time Warp Edit	137
Distance Lei Liu, Wangmeng Zuo, Dongyu Zhang, Naimin Li, and Hongzhi Zhang	137
Computerized Pork Quality Evaluation System Li Liu and Michael O. Ngadi	145
Abnormal Image Detection Using Texton Method in Wireless Capsule Endoscopy Videos Ruwan Dharshana Nawarathna, JungHwan Oh, Xiaohui Yuan, Jeongkyu Lee, and Shou Jiang Tang	153
Active Contour Method Combining Local Fitting Energy and Global Fitting Energy Dynamically Yang Yu, Caiming Zhang, Yu Wei, and Xuemei Li	163
Optic Disc Detection by Multi-scale Gaussian Filtering with Scale Production and a Vessels' Directional Matched Filter Bob Zhang and Fakhri Karray	173
Retinal Vessel Centerline Extraction Using Multiscale Matched Filter and Sparse Representation-Based Classifier Bob Zhang, Qin Li, Lei Zhang, Jane You, and Fakhri Karray	181
Pulse Waveform Classification Using ERP-Based Difference-Weighted KNN Classifier	191

## Health Care

Development of a Ubiquitous Emergency Medical Service System Based on Zigbee and 3.5G Wireless Communication Technologies Ching-Su Chang, Tan-Hsu Tan, Yung-Fu Chen, Yung-Fa Huang, Ming-Huei Lee, Jin-Chyr Hsu, and Hou-Chaung Chen	201
Digital Skating Board with RFID Technique for Upper Extremity Rehabilitation <i>CC. Chen, JC. Lin, CH. Chou, YY. Shih, and YL. Chen</i>	209

Knowledge Acquisition and Reasoning in Web Based Epidemic Analysis	215
Assistive Communication Robot for Pre-operative Health Care R. Khosla, MT. Chu, K. Denecke, K. Yamada, and T. Yamaguchi	224
Design and Implementation of a Digital Auscultation System Yuan-Hsiang Lin, Chih-Fong Lin, Chien-Chih Chan, and He-Zhong You	231
The Application of Non-invasive Oxygen Saturation Sensor to Evaluate Blood Flow in Human	241
Context Aware Health Monitoring System S. Sridevi, Bhattacharya Sayantani, K. Pal Amutha, C. Madan Mohan, and R. Pitchiah	249
Novel Two-Stage Analytic Approach in Extraction of Strong Herb-Herb Interactions in TCM Clinical Treatment of Insomnia Xuezhong Zhou, Josiah Poon, Paul Kwan, Runshun Zhang, Yinhui Wang, Simon Poon, Baoyan Liu, and Daniel Sze	258
Medical Diagnosis	
Clinical Usage Considerations in the Development and Evaluation of a Computer Aided Diagnosis System for Acute Intracranial Hemorrhage on Brain CT	268
Research on the Meridian Diagnostic System Based on the Measuring Principle of the Electrical Properties of Well, Source and Sea	

Acupoints..... 276Fengxiang Chang, Wenxue Hong, Jun Jing, Jialin Song, and Chao Ma

Atrial Fibrillation Analysis Based on Blind Source Separation in	
12-Lead ECG Data	286
Pei-Chann Chang, Jui-Chien Hsieh, Jyun-Jie Lin, and	
Feng-Ming Yeh	

State-of-the-Art of Computer-Aided Detection/Diagnosis (CAD)	296
Hiroshi Fujita, Jane You, Qin Li, Hidetaka Arimura,	
Rie Tanaka, Shigeru Sanada, Noboru Niki, Gobert Lee, Takeshi Hara,	
Daisuke Fukuoka, Chisako Muramatsu, Tetsuro Katafuchi,	
Gen Iinuma, Mototaka Miyake, Yasuaki Arai, and	
Noriyuki Moriyama	

Advances in Detecting Parkinson's Disease Pei-Fang Guo, Prabir Bhattacharya, and Nawwaf Kharma	306
Using Formal Concept Analysis to Visualize Relationships of Syndromes in Traditional Chinese Medicine Xulong Liu, Wenxue Hong, Jialin Song, and Tao Zhang	315
Wrist Pulse Diagnosis Using LDA Bo Shen and Guangming Lu	325
Computerized Wrist Pulse Signal Diagnosis Using KPCA Yunlian Sun, Bo Shen, Yinghui Chen, and Yong Xu	334
Framework of Computer-Assisted Instruction and Clinical Decision Support System for Orthodontics with Case-Based Reasoning Shu-Li Wang and Shih-Yi Yeh	344
Design of an Intelligent Reporting System for Cardiac Catheterization Fan Wu and Hsiao-Hui Li	353
Presenting a Simplified Assistant Tool for Breast Cancer Diagnosis in Mammography to Radiologists Ping Zhang, Jenny Doust, and Kuldeep Kumar	363
Medical Image Processing and Registration	

Feature Based Non-rigid Registration Using Quaternion Subdivision Fahad Hameed Ahmad, Sudha Natarajan, and Jimmy Liu Jiang	373
A Sparse Decomposition Approach to Compressing Biomedical Signals Lu Bing and Shiqin Jiang	383
A Comparative Study of Color Correction Algorithms for Tongue Image Iinspection Xingzheng Wang and David Zhang	392
An Mean Shift Based Gray Level Co-occurence Matrix for Endoscope Image Diagnosis	403
A Novel Criterion for Characterizing Diffusion Anisotropy in HARDI Data Based on the MDL Technique H.Z. Zhang, T.M. McGinnity, S.A. Coleman, and M. Jing	413
Author Index	423