

2019 IEEE 7th International Conference on Bioinformatics and Computational Biology (ICBCB 2019)

**Hangzhou, China
21 – 23 March 2019**



**IEEE Catalog Number: CFP1964M-POD
ISBN: 978-1-7281-0642-7**

**Copyright © 2019 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP1964M-POD
ISBN (Print-On-Demand):	978-1-7281-0642-7
ISBN (Online):	978-1-7281-0641-0

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

2019 IEEE 7th International Conference on Bioinformatics and Computational Biology

ICBCB 2019

Table of Contents

Preface.....	vii
Conference Committees.....	viii

• Session 1: Gene Sequencing and Analysis

Gene Regulatory Network Construction and Key Gene Recognition of Diabetic Nephropathy.....	1
<i>Rao Zheng, Yun Wang, Zhao-lei Lyu and Antonios Armaou</i>	
Whole-Genome Sequencing to Determine Origin of Diarrhea in Suckling Piglets in Southern China	7
<i>Jie Li, Jiating Qian, Xuanxuan Mao, Chunyi Xue and Yongchang Cao</i>	
Estimation of the Equilibrium GC Content of Human Genome	12
<i>Jian-Hong Sun, Shi-Meng Ai, Hong-Jun Luo and Bo Gao</i>	
Color Doppler Ultrasound in the Diagnosis of Acute Rejection after Allogeneic Renal Transplantation	18
<i>Yang Bai, Guang-hong Han and Ying Sun</i>	

• Session 2: Biosignal Detection and Analysis

Application of Deep Learning Models to MicroRNA Transcription Start Site Identification.....	22
<i>Clayton Barham, Mingyu Cha, Xiaoman Li and Haiyan Hu</i>	
Prediction Model of Chilling Injury Combined with Quadratic-Orthogonal-Rotation-Combination Design Technique for Postharvest Cucumber Fruit during Cold Storage.....	29
<i>Min Zhang, Jiale Li, Wenting Ai, Yuxuan Zhao and Wei Liu</i>	
Predicting RNA Molecular Specific Hybridization via Random Forest.....	35
<i>Weijun Zhu, Xiaokai Liu, Zhenfei Wang, Yongwen Fan and Jianwei Wang</i>	

Prediction of Linear B-cell Epitopes Based on PCA and RNN Network	39
<i>Ling-yun Liu, Hong-guang Yang and Bin Cheng</i>	
A Novel Convolutional Regression Network for Cell Counting	44
<i>Qian Liu, Anna Junker, Kazuhiro Murakami and Pingzhao Hu</i>	
Clu-RNN: A New RNN Based Approach to Diabetic Blood Glucose Prediction	50
<i>Yuhan Dong, Rui Wen, Zhide Li, Kai Zhang and Lin Zhang</i>	
Feature Engineering in Discrimination of Herbal Medicines from Different Geographical Origins with Electronic Nose	56
<i>Xianghao Zhan, Xiaoqing Guan, Rumeng Wu, Zhan Wang, You Wang and Guang Li</i>	

• Session 3: Bioinformatics and Computational Biology

Research on Localization of sEMG Detection Sites Across Individual Upper Limbs	63
<i>Yun-Long Wang, Xue-Liang Bao, Yu-Xuan Zhou, Xiao-Ying Lv and Zhi-Gong Wang</i>	
Research on Quantitative Classification of Exercise Fatigue Based on Fuzzy Comprehensive Evaluation Method.....	67
<i>Wei Wang, Huashan Si, Xiaoni Zhang and Zhangyong Li</i>	
A Real-Time Algorithm for Sleep Apnea and Hypopnea Detection	74
<i>Yuhan Dong, Jinbo Kang, Rui Wen, Changmin Dai, Xingjun Wang</i>	

Prototype System Design and Experimental Validation of Gait-Oriented EMG Bridge for Volitional Motion Function Rebuilding of Paralyzed Leg.....	79
<i>Zheng-Yang Bi, Xue-Liang Bao, Hai-Peng Wang, Xiao-Ying Lv and Zhi-Gong Wang</i>	

Adaptive Deep Brain Stimulation System Based on ADS1292.....	83
<i>Dechun Zhao, Li Wang and Shanshan Cheng</i>	

• Session 4: Biomedical Engineering

Synchronous Optimal Design of Genetic Oscillator Networks Using a Novel VonPSO Algorithm	88
<i>Wei Zhang, Qinjin Yao, Jianming Zhang and Guang Li</i>	

PASnet: A Joint Convolutional Neural Network for Noninvasive Renal Ultrasound Pathology Assessment.....	96
<i>Zhiwei Wu, Kai Qiao, Lijie Zhang, Jinjin Hai, Ningning Liang, Linyuan Wang and Bin Yan</i>	

Establishment and Simulation of 3D Gastric Impedance Detection Model	100
<i>Zhangyong Li, Shangzhi Xiang and Zhaoyu Liu</i>	

An Investigation and Analysis of Clinical Trials and Research Centers on Regenerative Medicine Industry—Case comparison between China and other countries	107
<i>Hongshen Pang, Ling Wei, Xiaochu Qin, Hongming Hou and HaiYun Xu</i>	

The Effects of Self-Regulation in Hippocampus Activation Using Different Types of Real-Time Neurofeedback	111
Yashuo Zhu, Hui Gao, Qiang Yang, Zhonglin Li and Li Tong	
Rare Association Rules Mining of Diabetic Complications Based on Improved Rarity Algorithm....	115
Qiao Pan, Lan Xiang and Yanhong Jin	
Exploring the Relationship between Neural Mechanism and Detection in Mental Fatigue by Genetic Algorithm and Hierarchical Clustering.....	120
Yinhe Sheng, Kang Huang, Jiemeng Zou, Liping Wang and Pengfei Wei	
Decoding Attention Position Based on Shifted Receptive Field in Visual Cortex	125
Xiaohan Duan, Ziya Yu, Li Tong and Linyuan Wang	
Ultrasound Evaluation of Balloon Angioplasty for the Treatment of Autogenous Arteriovenous Fistula Anastomotic—Stenosis Ultrasound evaluation of PTA for AVF anastomotic stenosis	130
Yang Bai, Guang-hong Han and Jin-hai Yu	
• Session 5: Information Medicine and Neuroscience	
Study on the Method of Blood Microscopic Multi-field Image Stitching	134
Zhangyong Li, Hui Liu, Mengxi Ju, Fuqu Chen and Xinwei Li	
Stability of MRI Radiomic Features of the Hippocampus: An Integrated Analysis of Test-Retest Variability.....	140
Zhuoran Li, Huichuan Duan, Kun Zhao, Yanhui Ding and Yuanjie Zheng	
A Novel RNN-Based Blood Glucose Prediction Approach Using Population and Individual Characteristics.....	145
Yuhan Dong, Rui Wen, Kai Zhang and Lin Zhang	
A Head Pose Estimation Method Based on Multi-feature Fusion	150
Zhiqiang Zhao, Qiaoli Zheng, Yan Zhang and Xin Shi	
Applying L-SRC for Non-invasive Disease Detection Using Facial Chromaticity and Texture Features	156
Jianhang Zhou, Qi Zhang and Bob Zhang	
Endoscopic Image Colorization Using Convolutional Neural Network.....	162
HuiPeng Jiang, SongYuan Tang, Yating Li, Danni Ai, Hong Song and Jian Yang	
Study on the Characteristics of Blood Agglutination Based on Microscopic Images	167
Zhangyong Li, Qianqian Chen, Fuqu Chen and Chao Ge	
Improved SMQT Algorithm and PCNN Model for Micro-calcification Clusters Detection in Mammograms	172
Lili Zhu, Yonggang Guo, Jianhui Tu, Yide Ma, Ya'nan Guo, Zhen Yang and Deyuan Wang	

Dynamic MRI Reconstruction Exploiting Partial Separability and t-SVD	179
<i>Shuli Ma, Huiqian Du, Qiongzh Wu and Wenbo Mei</i>	
Fast Localization Algorithm of Eye Centers Based on Improved Hough Transform.....	185
<i>Zhiqiang Zhao, Yan Zhang and Qiaoli Zheng</i>	
• Session 6: Medical image Processing and Application	
Characterization of Cell Microcapsules and Preparation via Digital Coaxial Injection	190
<i>Qing Li, Rongshuai Liu, Weipeng Zhang and Yuxi Feng</i>	
The Automatic Repairing Method Addressing Clipping Distortions and Frictional Noises in Electronic Stethoscope	195
<i>Ning Zhou, Jiajun Wang, Bing Sun, Renyu Liu and Nan Hu</i>	
The Primary Study for the Integration of Wax-Based Microfluidics on Textile Product	200
<i>Jing Zhang, Xianbo Qiu, Yiqiang Fan, Lulu Zhang and Guijun Miao</i>	

Author Index