2023 IEEE 5th Eurasia Conference on Biomedical Engineering, Healthcare and Sustainability (ECBIOS 2023)

Tainan, Taiwan 2-4 June 2023



IEEE Catalog Number: CFP23ECF-POD **ISBN:**

979-8-3503-2098-5

Copyright © 2023 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:	CFP23ECF-POD
ISBN (Print-On-Demand):	979-8-3503-2098-5
ISBN (Online):	979-8-3503-2097-8

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



Table of Content

Editorial	II
Table of Content	IV

• **Bioengineering**

from Edge Impulse

Automated Cell Counting System Using Improved Implicit Activation Based U-net (IA-
U-net)	1
Salman Md. Sultan, Mubina Tarannum Mollika, Sharvi Ahmed Fahim, Tahira Alam, Alaelddin F. Y. Moham	med,
Tanzina Islam	
Classify Brain Tumors from MRI Images: Deep Learning-based Approach	5
Chun-Cheng Peng, Bo-Han Liao	
Combating Multidrug-Resistant Gram-Negative Bacteria Using Biofilm Protein	
Pase 1 as Novel Dispersal Agent for Co-Treatment Therapy	9
Michelle Lin	
Deep Learning Approach for Non-Alcoholic Fatty Liver Recognition	13
Chun-Cheng Peng, Jian-Min Lin	
Deep Learning-Assisted Lung Cancer Diagnosis from Histopathology Images	17
Chun-Cheng Peng, Jia-Wei Wu	
Development of Android-based Pulmonary Monitoring System for Automated Lu	ıng
Auscultation using Long Short-Term Memory (LSTM) Network with Post-Process	ing

21

Avila, Kaye Antoinette V.; Cabrera, Beatrice Corine R.; Reyes, Rosula S. J.; Oppus, Carlos M.

Development of Arabic Computer-Based Screening Tool for Early Detection of	
Dementia	27
Ahmad O. Alokaily	
Effects of Immersive Virtual Reality Puzzle Solving Video Games on Cognition, Mot	or
Control, and Functional Behavior in People With Schizophrenia Spectrum Disorders	30
Jen-Suh Chern, Yu-Chih Mao	
Enhancing Colorectal Cancer Histological Image Classification Using Transfer Learnin	g
and ResNet50 CNN Model	36

Chun-Cheng Peng, Bing-Rong Lee

Hand Brace with Infrared Heating and Blood Perfusion Monitoring System	41
Lin-Yen Chang, Bor-Shyh Lin, Jui-Yi Weng, Jinn-Rung Kuo	

Identification of TYMS and DTL as Candidate Biomarkers of Cervical Cancer as	
Determined by Integrated Bioinformatics Analysis	44
Yi-Fan Chou, Pei-Yu Chou, Ming-Jyh Sheu, Charles C.N. Wang	

Investigation Transillumination Mode at 660 and 780 nm for Non-Invasive Blood	
Glucose Monitoring Device	50
Anh Thu Pham Nguyen, Trung Tin Le, Ngoc Yen Bui Tran, Hoang Nhut Huynh, Anh Hao Huynh Vo,	

Trung Nghia Tran

Prediction of Elbow Joint Motion of Stroke Patients by Analyzing Biceps and Triceps	
Electromyography Signals	54
Hassan M. Qassim, W. Z. Wan Hasan, H. R. Ramli, Hazreen H. Harith, Liyana Najwa Inchi Mat, MSF Salim	

Prediction of Retina Damage in Optical Coherence Tomography Image Us	sing Xception
Architecture Model	58
Minh Thanh Do, Hoang Nhut Huynh, Trung Nghia Tran, Thuy Linh Hoang	

Relationship between Mechanical Deformation and Contact Force Applied by Cat	heter
Tip on Cardiac Muscle: Experimentation and Computer Modeling	62

Yukako Ijima, Kriengsak Masnok, Juan J. Perez, Ana González-Suárez, Enrique Berjano, Nobuo Watanabe

Thoracic Aortic Calcification and Carotid Atherosclerosis Prediction by Brachial-anklePulse Wave Velocity66

Qingyuan Wu, Teng Li, Dongchao Yang, Zuchang Ma, Yining Sun

Use of Nonlinear Analysis Methods for Evaluating IMU Data of Bilateral Jump Landing Tasks 71

Jan Hejda, Tommy Sugiarto, Petr Volf, Yi-Jia Lin, Patrik Kutílek, Wei-Chun Hsu, Marek Sokol, Jia-Lin Wu, Lýdie Leová, Yah-Shiun Jiang, Yong-Jie Deng

Use of Nonlinear Analysis Methods for Visual Evaluation and Graphical Representation of Bilateral Jump Landing Tasks 75

Petr Volf, Wei-Chun Hsu, Jan Hejda, Yi-Jia Lin, Patrik Kutílek, Tommy Sugiarto, Marek Sokol, Lýdie Leová, Hsiao-Liang Tsai, Ssu-Yu Chang, Li-Xin Tang

<u>Communication, Networking & Broadcasting</u>

Implementation of IoT-Based Healthcare Kit	
Tanya Chanchalani, Gaurav R, Bhushan Kiran Munoli, Sinchitha H V, Purushotham U	

Investigating Safety and Efficiency of Wearable Mixed Reality Helmet Interact	ion
Design for Delivery Riders in Multitasking Environment	83
Rui Li, Wenshuo Lin, Zhilei Huo, Gang Ren, Zheyan Cheng, Gang Wang, Siyan Dong, Jiaqi Li	

79

92

Promoting Healthy Sitting Posture during Study Sessions with	Posture-Based
Interaction Smart Learning Environment	88
Zhilei Huo, Jiaqi Li, Rui Li, Gang Wang, Zheyan Cheng, Gang Ren	

Sleep Quality Monitoring IoT-based Healthcare System

Li-Wei Jiang, Yi-Jie Li, Liang-Sian Lin, Chen-Huan Kao

• Components, Circuits, Devices & Systems

Intelligent Medication Warehouse Environment Monitoring System	96
Chaochao Miao, Peijiang Chen, Yaochang Xi, Xiaoyang Li	
Speed Settling of AC-Coupled Amplifier for Active Contactless ECG Electrode	100
Xicai (Alex) Yue, Janice Kiely, Keith Errey	
Tap and Swipe Smartphone Gestures Indicating Hand Tremor and Finger Joint Range	
in Motion	104

Wilson O. Torres, Hannah S. Stuart

• <u>Computing & Processing (Hardware/Software)</u>

3D Facial Reconstruction Applied to Medical Cosmetology	108
Sheng-Hsien Hsieh, Ming-Yi Lin, Ching-Han Chen	

3-Lane Based Traffic Signal Control Using Sequential-Duel Deep Q-network (SD-DQN) 112

Sumaiya Bhumeka, Nishat Tasnim Tanah, Alifun Nahar, Tahira Alam, Salman Md. Sultan

A Design of Emote Education Platform for Traditional Chinese Medicine	Pharmacology
Based on VR Technology	116
Chuying Wang, Yajie Zhang, Lijing Li, Yumei Li	

Acquisition and Remote Transfer of Operative Field View During Open Surgery	119
Malek Anabtawi, Jhasketan Padhan, Abdulla Al-Ansari, Zhigang Deng, Elias Yaacoub, Amr Mohammed,	
Nikhil V. Navkar	

AI Classification System on Sarcopenia for Elderly	123
Yu-Ting Hung, Bo Liu, Yang-Cheng Lin	
Application of Intelligent Medical Self-test Management	127

Chein-Ting, Chen; Sheng-Huang, Kuo

Application of MP-YOLO for Segmentation and Visualization of Ovarian UltrasoundImagingChen-Ji Wang, Cheng-Si He, Rui-Xuan Yan, Yuan-Chen Liu
Automatic Labeling of Rice Seedlings in Unmanned Aerial Vehicles Images133Jui-Feng Yeh, Li-Ching Yuan
Blockchain-based Privacy Preserved Physiological Data Sharing Platform136Xue-Qin Guan, Yu-Heng Hsieh, Shyan-Ming Yuan
BP-ExerGuide: Smart Blood Pressure Monitor System for Personalized Exercise SafetyGuidelines in Senior CommunitiesYu-Sheng Lin, Chih-Chun Lin, Guan-Wei Huang, Jing-Peng Wu, Li-Chieh Kuo, Fong-Chin Su, Yi-Ching Yang
Data Mining and Analysis of Video Barrage By AI Algorithm144Daoqing Gong, Xinyan Gan, Xiaonian Tang, Hua Li, Xiang Gao
Deep Learning and Explainable Machine Learning on Hair Disease Detection150Wei Wei Heng; Abdul-Kadir, N. A.
Ensemble Application of Fuzzy Multicellular Gene Expression by Programming Algorithm 154 Cheng Yuan, Hua Li, Yuanxia Zhang, Daoqing Gong
Experimental Teaching System of Human Physiology and Artificial IntelligenceApplication in Basic Medical Education158Nan Zhou, Xin Li, Dexiu Wang, Chengwen Jin, Weihao Wang, Xiaodong Cui
Facial Image Emotion Recognition Based on Convolutional Neural Networks and HaarClassifiers161Jui-Feng Yeh, Wei-Tse Hung, Chia-Chen Chang, Ting-Hao Wang
Graph Neural Network for Malware Detection and Classification on Renewable EnergyManagement Platform164Hsiao-Chung Lin, Ping Wang, Wen-Hui Lin, Yu-Hsiang Lin, Jia-Hong Chen

Heart Rhythm Abnormal Signal Diagnosis Based on Neural Network Deep Learning 167	
Wang Jiao, Wei Wei	
Inclusion-exclusion Knowledge Filtering Approach for Conversation-based Preliminary Diagnosis 170 Binghong Chen, Jenhui Chen	
Integrating FMCW Radar and RGBD Sensor for Vital Sign Detection175Sheng-Hsien Hsieh, Yuh-Jiuan Tsay, Yu-Wei Chen, Ya-Yun Huang, Yu-Xuan Yu	
Investigation of Status of Bananas During Ripening With Wavelengths In 405–940 nm 178	
Huu Tai Duong, Anh Tu Tran, Hong Duyen Trinh Tran, Trung Nghia Tran	
Machine Learning Approach to IoT- based Water Quality Monitoring182Chin-Chih Chang, Chi-Hung Wei, Min-Tien Lin, Sz-Chwun John Hwang	
Pedestrian Fall Detection Using Improved YOLOv5187Yaochang Xi, Peijiang Chen, Chaochao Miao	
Research on Reconstruction Simulation of Immersive Interactive Landscape DesignBased on Digital Virtual Technology192Ye Wang	
Study of Application of Google IT to Build Corporate Diagnostic Application Forms 197 Chien-Ting Chen	
Telementoring System Assessment Integrated with Laparoscopic Surgical Simulators 200	
200 Dehlela Shabir, Sarra Kharbech, Jhasketan Padhan, Elias Yaacoub, Amr Mohammed, Zhigang Deng, Abdulla Al-Ansari, Panagiotis Tsiamyrtzis, Nikhil V. Navkar	
Unleashing Potential of Employees through Artificial Intelligence204Aishwarya Gowda A G, Hui-Kai Su, Wen-Kai Kuo	

2023 IEEE 5th Eurasia Conference on Biomedical Engineering, Healthcare and Sustainability

<u>Robotics & Control Systems</u>

Application of 3-D Path Planning and Obstacle Avoidance Algorithms on Obstacle-Overcoming Robots 207

Huang Yuanhao, Huang Shi, Wang Hao, Meng Ruifeng

• Signal Processing & Analysis

Denoising of Heart Sound Signal for Myocardial Infarction Detection Based on Adaptive Filtering 213 Ira Puspasari, Tati L. R. Mengko, Agung W. Setiawan, Trio Adiono, Miftah Pramudyo

Detection of Bradycardia in Preterm Infants by using ECG and Respiratory Signals 217 *Ting-Kai Hsu, Han-Chien Cheng, Shu-Nung Yao*

Internet-of-Things Acoustic Wearable for Vital Sign Monitoring: Design and Validation 221

Yi Yang Ang, Shanelle Ng, Vivian Koh, Rex X. Tan

Author Index