

2022 14th Biomedical Engineering International Conference (BMEiCON 2022)

**Songkhla, Thailand
10-13 November 2022**



**IEEE Catalog Number: CFP2258R-POD
ISBN: 978-1-6654-8904-1**

**Copyright © 2022 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:	CFP2258R-POD
ISBN (Print-On-Demand):	978-1-6654-8904-1
ISBN (Online):	978-1-6654-8903-4
ISSN:	2334-3052

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

TABLE OF CONTENTS

A Radiopathomics Model for Prognosis Prediction in Patients with Gastric Cancer.....	1
<i>Yuanshen Zhao, Jingxian Duan, Zhi-Cheng Li, Ningli Chai, Longsong Li</i>	
Detection and Classification of COVID-19 Chest X-Rays by the Deep Learning Technique	5
<i>Wannika Sonarra, Naphatsawan Vongmanee, Nutthanan Wanluk, Chuchat Pintavirooj, Sarinporn Visitsattapongse</i>	
Computerized Medical Device Management System in Luangprabang Provincial Hospital.....	10
<i>Sengaloun Xayalath, Nuntachai Thongpance, Anantasak Wongkamhang, Anuchit Nirapai</i>	
Detection of Mineral (Ca/Fe) Concentration in Blood Using the Complex Bioimpedance	15
<i>Lorant Andras Szolga</i>	
Embedded Photographic Tomography Using Raspberry Pi.....	20
<i>Rujipas Janthraprasert, Chuchart Pintavirooj</i>	
Attempts at Enhancing eVision’s Influenza Forecasting Using Social Media	24
<i>Navid Shaghghi, Yash Kamdar, Ron Huang, Andres Calle, Jaidev Mirchandani, Michael Castillo</i>	
A Microfluidic Sensor for Single Cell Detection and Counting Bull Sperms Cell.....	29
<i>Chalinee Phiphattanaphiphop, Rungrueang Phatthanakun, Komgrit Leksakul</i>	
CT Dataset Enhancement Using Additional Feature Insertion for Automatic Femur Segmentation Model Based on Deep Learning	34
<i>Miss Kamonchat Apivanichkul, Pattarapong Phasukkit, Dankulchai Pittaya</i>	
Electroporation of Canine MCT Cells and the Examination by Impedance Measurement	39
<i>Patcharapon Kangwarnchokchai, Boonchai Techaumnat, Noppadon Nuntawong, Kenji Mishima, Tanjina Sharmin, Taku Michael Aida</i>	
On the Generalized Inverse for MRI Reconstruction	44
<i>Tzu-Hsueh Tsai, Hsin-Chia Chen, Hao Chiao Yang, Yu-Chieh Chao, Jyh-Miin Lin, Chih-Ching Chen, Hing-Chiu Chang, Chin-Kuo Chang, Wei-Hsuan Yu, Feng-Nan Hwang, Martin Graves</i>	
A Prussian Blue Modified Electrode Based Amperometric Sensor for Lactate Determination	49
<i>Parnpim Kuntawong, Benchaporn Lertanantawong, Chamras Promptmas</i>	
Using Semi-Supervised Transfer Learning for Classification of Solar Lentigo, Lentigo Maligna, and Lentigo Maligna Melanoma.....	54
<i>Nattapong Thungprue, Nathakorn Tamronganunsakul, Manasanun Hongchukiat, Kanee Sumetpipat, Tanawan Leeboonngam</i>	
Transmembrane Carbon Nanotubes for Intracellular Stimulation.....	59
<i>Shoichiro Kanno, Zugui Peng, Kenta Shimba, Yoshitaka Miyamoto, Tohru Yagi</i>	
Real-Time Epilepsy Detection with IMU and Low Power Processor Design	63
<i>Yu-Ju Su, Kuei-Ann Wen, Mei-Yun Cheng, Chen-Nen Chang</i>	
Prevalence Survey of Renal Replacement Therapy Services: A Cross-Sectional Study.....	68
<i>Chinakorn Sujimongkol, Somsri Daochai, Kuttiya Kaewsombut, Chayanis Daochai</i>	

C2C12 Differentiation and Orientation Approach Towards Actuation Improvement for Biohybrid Robots.....	73
<i>Xuanxuan Xie, Wenze Wu, Lin Gao, Tianjiao Chen, Bo Zhang</i>	
Training Experience to Share Japanese CE System with Thai BMEs: Possibility of Participation by BMEs in Intensive Team Care in Thailand	77
<i>Junpei Harada, Hideki Nishihara, Nuntachai Thongpance, Sani Boonyagul, Takaaki Kinoue</i>	
Effect of Mechanical and Electrical Stimulation on the Differentiation and Orientation of C2C12 Cells.....	80
<i>Wenze Wu, Xuanxuan Xie, Lin Gao, Jingxuan Liu, Bo Zhang</i>	
Innovative Solution with Applying Design Thinking Process: A Case Study of Wireless Endoscope for Carpal Tunnel Release.....	85
<i>Surapong Chatpun, Wongthawat Liawrungrueang, Pornchai Prukpattranon, Sunton Wongsiri</i>	
Evaluating Improvement on Feature Selection for Classification of Implicit Learning on EEG's Multiscale Entropy Data Using BMNABC	89
<i>Chayapol Chaiyanan, Boonserm Kaewkamnerdpong</i>	
Printability and Cytotoxicity of Alginate/Agarose Hydrogel with Carboxymethyl Cellulose and Apple Powder.....	94
<i>K. Chessadangkul, N. Damrongplasit, S. Morakul, T. Tharasanit, A. Pimpin</i>	
Preparation of Biocompatible PVA Hydrogels as Wound Dressings by Gamma Irradiation.....	99
<i>R. Chiangnoon, P. Karawak, J. Eamsiri, N. Thamrongsiripak, P. Uttayarat, W. Angkhasirisap, S. Ampawong</i>	
A Compact Water Loaded Choke Configurations for Intracavitary Microwave Hyperthermia.....	103
<i>KP Shabeeb Ahamed, Kavitha Arunachalam</i>	
Depressive States in Healthy Individuals Lead to Biased Processing on Frontal-Parietal ERPs.....	108
<i>Pengcheng Li, Daiki Okamoto, Mio Yokoyama, Hironori Nakatani, Tohru Yagi</i>	
Processing and Preservation of Amniotic Membranes as Biological Wound Dressings.....	113
<i>P. Karawak, R. Chiangnoon, P. Uttayarat, M. Kitporntheranunt, T. Yooyen, K. Chahorm, N. Thamrongsiripak, N. Jangsawang, N. Neramitmansook</i>	
Enhancement of the Response to Ultrasound by Encapsulating Metal Nanoparticles in Liposomes.....	117
<i>Yukine Tagai, Kano Kajie, Zugui Peng, Kenta Shimba, Yoshitaka Miyamoto, Takashi Shibata, Tohru Yagi</i>	
Diagnosis of Heart Failure Using High Quality Ballistocardiography and Respiratory Effort Signals: A Pilot Study	122
<i>Shen Feng, Han Zhang, Andong Bao, Pengtao Sun, Xiaomu Luo, Guanyang Lin, Huan Cen, Sinan Chen, Yuexia Liu, Wenning He, Zhiqiang Pang</i>	
Development of a Battery Using a Hydrogel Network.....	127
<i>Kohtaro Hongo, Zugui Peng, Kenta Shimba, Yoshitaka Miyamoto, Tohru Yagi</i>	
Development of Variable-Elasticity Cell Scaffolds Using Magnetic Gels.....	131
<i>Yuya Shimomura, Zugui Peng, Kenta Shimba, Yoshitaka Miyamoto, Tohru Yagi</i>	
SNR Estimation in EMG Signals Contaminated with Motion Artifact.....	136
<i>Thandar Oo, Pornchai Phukpattaranont</i>	

Acute Kidney Injury Detection Using Real Human Urine NGAL Biomarker Sensor Based on 3D Graphene	140
<i>Netnapa Sittihakote, Sirirat Anutrakulchai, Adisorn Tuantranont, Pobporn Danvirutai, Chavis Srirachan</i>	
A Combination of a 3D Surface Model and CBCT Images for Dental Applications Using VTK Library	144
<i>Walita Narkbuakaew, Kongyot Wangkaoom, Duangkamol Banarsarn, Chalinee Thanasupsombat, Saowanee Iamsiri, Saowapak S. Thongvigitmanee</i>	
Classification Model for Predicting Inflammation of the Urinary Bladder and Acute Nephritis of the Renal Pelvis	148
<i>Chanin Lochotinunt, Suejit Pechprasarn, Treesukon Treebupachatsakul</i>	
Performance Analysis of Machine Learning Models for Angular Interrogation of Surface Plasmon Resonance.....	153
<i>Siratchakrit Shinnakerdchoke, Kitsada Thadson, Suejit Pechprasarn, Treesukon Treebupachatsakul</i>	
Automatic Cardiopulmonary Resuscitation System.....	158
<i>Rawin Keakultanes, May Phu Paing, Chuchart Pintavirooj</i>	
A Comparison Between Wavelet Scattering Transform and Transfer Learning for Elevated Blood Pressure Detection.....	163
<i>Erick Axel Martinez-Rios, Luis Montesinos, Mariel Alfaro</i>	
Precise Motor Function Monitor for Parkinson Disease Using Low Power and Wearable IMU Body Area Network	168
<i>Wei-Hsiang Chang, Kang-Du Liou, Yo-Tsen Liu, Kuei-Ann Wen</i>	
Statistical Representation of Emotions for Puzzle Workload Using Electroencephalogram and Heart Rate Variability.....	173
<i>Tomohiko Igasaki, Aoi Takahi, Saori Nishikawa</i>	
Prototype – Wearable Device for Detecting Extravasation Using Temperature Sensor and IOT Monitoring System	178
<i>Niti Petranon, Naphatsawan Vongmanee, Nutthanan Wanluk, Chuchart Pintavirooj</i>	
Soft Robotic Glove with Alpha Band Brain Computer Interface for Post-Stroke Hand Function Rehabilitation	181
<i>Xiaodong Li, Junlin Wang, Xiang Cao, Wei Huang, Yong Hu</i>	
Frequency-Dependent Functional Connectivity of Brain Networks at Resting-State	186
<i>Anna V. Guglielmi, Giulia Cisotto, Tomaso Erseghe, Leonardo Badia</i>	
Automatic Ray-Sum Panoramic Synthesis from Cone-Beam CT Data.....	191
<i>Duangkamol Banarsarn, Walita Narkbuakaew, Kongyot Wangkaoom, Saowanee Iamsiri, Saowapak S. Thongvigitmanee</i>	
Finite Element Analysis of Plantar Pressure Distribution in Diabetic Foot During Stance Phase of the Gait Cycle Without and with Custom-Made Insole.....	195
<i>Muhammad Nouman, Surapong Chatpun</i>	
Remote Temperature Monitoring for Infant Incubator Using Thermal Camera.....	200
<i>Thanaporn Chuenpirom, Kasama Srirussamee, Chuchart Pintavirooj</i>	

A Control System in a Micro Cone-Beam CT Machine.....	204
<i>Atthasak Kiang-Ia, Sathid Rukkhong, Tanapon Srivongsa, Kittipong Kasantikul, Chalinee Thanasupsombat, Sorapong Aootaphao, Saowapak Thongvigitmanee</i>	
Preliminary Study of the Relationship Between Age and Gender Using Sounds Generated from the Nostrils and Pharynx During Swallowing in Healthy Subjects	208
<i>Naru Sato, Tomohiko Igasaki, Chiharu Matsumoto, Tadashi Sakata, Hitomi Maeda</i>	
The Effect of Visual Cognition on the Fear Caused by Pain Recall.....	213
<i>Nina Itagaki, Keiji Iramina, Yutarou Nakada</i>	
Development a Teleconsultation Platform for Outpatients During the COVID-19 Pandemic Based on Cloud Firestore and Realtime Databases	217
<i>Khanista Namee, Korapin Infueng, Jantima Polpinij, Orrawan Suwittayapun, Phattaraporn Promsurapat, Areej Meny</i>	
Reconstruction of 3D Abdominal Aorta Aneurysm from Computed Tomographic Angiography Using 3D U-Net Deep Learning Network	222
<i>Siriporn Kongrat, Chuchart Pintavirooj, Supan Tungjitkusolmun</i>	
A Low-Cost Digital Stethoscope for Normal and Abnormal Heart Sound Classification.....	226
<i>Sorawit Khoruamkid, Sarinporn Visitsattapongse</i>	
Detection of Creatinine Using Molecularly Imprinted Polymers (MIP) Technique.....	232
<i>Teerachote Pitayataratorn, Wannisa Sukjee, Chak Sangma, Sarinporn Visitsattapongse</i>	
Classification of Depression Audio Data by Deep Learning.....	238
<i>Phanomkorn Homsiang, Treesukon Treebupachatsakul, Komsan Kiatrungrit, Suvit Poomrittigul</i>	
Nanoliposome of Linolenic Acid for Methicillin-Resistant Staphylococcus Aureus Treatment.....	242
<i>Azmee Okriss, Julinthip Puttawong, Mingkwan Yingkajorn, Somyot Chirasatitsin, Soracha D. Thamphiwatana</i>	
Joint Space Narrowing Progression Quantification with Joint Angle Correction in Rheumatoid Arthritis	246
<i>Yafei Ou, Prasoon Ambalathankandy, Ryunosuke Furuya, Seiya Kawada, Tamotsu Kamishima, Masayuki Ikebe</i>	
A Comparative Study of Convolutional Neural Networks for Mammogram Diagnosis	251
<i>Anongnat Intasam, Yuttachon Promworn, Somchai Thanasitthichai, Wibool Piyawattanametha</i>	
The Importance of Gender Specification for Detection of Driver Fatigue Using a Single EEG Channel.....	257
<i>Mohammad Shahbakhti, Matin Beiramvand, Erfan Nasiri, Wei Chen, Jordi Solé-Casals, Michal Wierzchon, Anna Broniec-Wójcik, Piotr Augustyniak, Vaidotas Marozas</i>	
A Ventilator Circuit for Volume Control Mode	260
<i>A. Sanpanich, N. Komalawardhana, K. Petsarb</i>	

Author Index