



2019 IEEE INTERNATIONAL CONFERENCE ON

2019

TIANJIN, CHINA

JUNE  
14-16

**CIVEMSA**

COMPUTATIONAL INTELLIGENCE & VIRTUAL ENVIRONMENTS FOR  
MEASUREMENT SYSTEMS AND APPLICATIONS



# 2019 CONFERENCE PROGRAM

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## **Welcome Message from the Chairpersons**

On behalf of the steering and organizing committees, it is our great pleasure to welcome you to the twenty-fourth annual IEEE International Conference on Computational Intelligence and Virtual Environments for Measurement Systems and Applications (IEEE CIVEMSA 2019), held in Tianjin, China, on June 14-16, 2019.

This conference is co-sponsored by the IEEE Computational Intelligence and IEEE Instrumentation and Measurement Societies. It focuses on all aspects of computational intelligence, virtual environments and human-computer interaction technologies for measurement systems and related applications. We believe that the organizing and steering committees have put together a very exciting and interesting program. This latter includes peer-reviewed papers that highlight standpoints on some latest recent advances to address some critical computational intelligence challenges for intelligent measurement, virtual reality systems, machine & deep learning for intelligent systems, and applications. Additionally, to acknowledge excellence and merit in a conference paper candidate, we organized an IEEE Best Paper Award and a Student Paper Competition, from the IEEE co-sponsors societies, based on paper novelty, clearness, ingenuity and groundbreaking research in the respective area.

We believe that the keynote speaker topic shelters a highly relevant set of materials that we trust will bring some conference participants to share viewpoints and thoughts on this topic. In particular, the two-day conference program aims to provide a forum for the attendees to carry out presentations, information exchanges, and extensive discussions on theory, methodology and application in the field of interest of the conference. This is as well as to foster networking, planning for future collaborations and new research projects that will further advance the use of computational intelligence and virtual environments in the instrumentation and measurement field and the related applications. We hope the conference will foster and discuss opportunities and challenges in using computational intelligence and virtual environments breakthroughs aiming to the advancement of instrument performance and measurement capabilities, and all related applications in a broad spectrum of areas. To promote interaction and discussion in the audience, sufficient time is allocated to presenters not only to introduce their achievements, but also to engage in extended discussions with the participants.

This year we have participants from more than eight countries. Participants are welcome to benefit from the rich research work that will be presented and enjoy the hospitality and diversity of Tianjin. The town is the largest opening coastal city in North China and one of the National Famous Historical and Cultural Cities in China. Tianjin plays a prominent role in China's modern history and can be viewed as an epitome of modern history of China. The blend of Chinese and Western cultures forms Tianjin's distinctive human resources.

## Welcome Message from the Chairpersons

We hope you will find IEEE CIVEMSA 2019 a challenging and productive experience, celebrating the twenty third-year anniversary of this conference, since its inception in 1996 as “*IEEE Workshop on Emerging Technologies for Instrumentation and Measurement*”. We trust that you will also enjoy the location, the culture and the food: Tianjin will be an exciting experience!

We are looking forward to meeting everyone at the conference in June.

**Honorary Chairs** Vincenzo Piuri, *Università degli Studi di Milano, Italy*  
Emil M. Petriu, *University of Ottawa, Canada*

**General Chairs** Yong Hu, *The University of Hong Kong & Chinese Academy of Medical Sciences, China China*  
Dong Ming, *Tianjin University, China*  
Mel Siegel, *Carnegie Mellon University, USA*

**Program Chairs** Yonghua Chen, *The University of Hong Kong, China*  
Guizhi Xu, *Hebei University of Technology, China*  
Angelo Genovese, *Università degli Studi di Milano, Italy*

# IEEE CIVEMSA 2019 Organizers

## Honorary Co-Chairs

Vincenzo Piuri, Università degli Studi di Milano, Italy  
Emil M. Petriu, University of Ottawa, Canada

## General Co-Chairs

Yong Hu, The University of Hong Kong & Chinese Academy of Medical Sciences, China  
Dong Ming, Tianjin University, China  
Mel Siegel, Carnegie Mellon University, USA

## Program Co-Chairs

Yonghua Chen, The University of Hong Kong, China  
Guizhi Xu, Hebei University of Technology, China  
Angelo Genovese, Università degli Studi di Milano, Italy

## Local Arrangement Chair

Jiangbo Pu, Institute of Biomedical Engineering, Chinese Academy of Medical Sciences, China  
Guangjian Ni, Tianjin University, China

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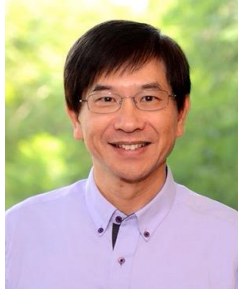
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Tianjin University

# Keynote Speakers

Friday, June 14, 9:20-10:40



**Title: Using Machine Learning and Neurophysiological Measurement to Better Understand the Human Brain in Real and Virtual Environments**

Tzyy-Ping Jung, UC San Diego, National Chiao Tung University, and Tianjin University

## Abstract

Machine learning including deep learning has made considerable progress in the past few years. Specifically, it has made a significant contribution to our ability to attack problems with complex, unstructured, and unlabeled data and approach/surpass human performance in some tasks. While the human brain has long regarded as a source of inspiration for machine learning, less effort has been made to appreciate how machine learning has advanced the understanding of the human brain. This talk will focus on how machine-learning algorithms can be used to tag cognitively meaningful events in neurocognitive studies conducted in real and virtual environments and decode the cognitive states and emotional responses of humans based on multi-modal physiological data. Our study results demonstrate that machine-learning algorithms have opened a novel and revolutionary window into complex neural and physiological data, leading to a more detailed understanding of the strengths and limitations of the human mind and possible applications to medicine and cognitive monitoring.

## Speaker's Bio

**Tzyy-Ping Jung** is currently the Co-Director of Center for Advanced Neurological Engineering, an Associate Director of the Swartz Center for Computational Neuroscience and an Adjunct Professor of Department of Bioengineering at University of California San Diego, CA, USA. Dr. Jung's research emphasis has been placed on the integration of the cognitive sciences, basic and clinical neuroscience, bioengineering, and machine learning. Dr. Jung established transformative techniques for applying blind source separation to decompose multichannel biomedical signals (e.g. EEG, MEG, ERP, MRS, and fMRI) and was elevated to an IEEE Fellow for his contributions to blind source separation for biomedical applications in 2015. Dr. Jung and his colleagues have also spearheaded the instrumentation and research in real-world neuroimaging and brain-computer interface technologies to study the brain activities from unconstrained, freely moving individuals in naturalistic positions and postures within real-world environments.



**Title: Computer-aided diagnosis systems for the detection of colorectal polyps and the analysis of colorectal tumor using colonoscopy images/videos**

Xin Zhu, University of Aizu, Japan

**Abstract**

Colorectal cancer has the highest morbidity and the second highest mortality among all cancer in Japan. 80-90% of colorectal cancer is caused by an adenoma-carcinoma sequence and a serrated neoplastic pathway. Therefore, most of colorectal cancer may be prevented if colorectal polyps can be removed timely. Colonoscopy is a golden standard for the diagnosis of colorectal polyps and cancer. However, it is reported that adenoma miss rates at colonoscopy are in a range of 6-27%. Some polyps missed at colonoscopy examinations are within endoscopists' visual fields but not recognized. In this presentation, we will introduce our automatic polyp-detection system to serve as a second observer and inform endoscopists to unrecognized lesions. In addition, we will also introduce an automatic identification system to find deeply invasive colorectal cancer on non-magnified colonoscopy images.

**Speaker's bio**

Prof. Xin Zhu received his bachelor's and master's degrees in biomedical engineering in 2000 and 2002, respectively from Tianjin University in China. He obtained his Ph.D.'s degree in computer science and engineering from the University of Aizu in Aizu-Wakamatsu, Fukushima, Japan in 2006. He served as a postdoc researcher at Biomedical Information Technology Lab, the University of Aizu in 2006-2009. He became an associate professor at the same lab in 2009. Currently, he is a senior associate professor at Biomedical Information Technology Lab, and a research leader in the Center for Advanced Information Science and Technology, the University of Aizu.

His research interests include biomedical signal processing, cardiac modeling and simulation, biomedical image processing and analysis, and healthcare. Currently, his main research projects include computer modeling and simulation of implantable cardiac device, unconstrained sleep monitoring and analysis, computer-aided diagnosis of colorectal tumors using colonoscopy images/videos, computer-aided diagnosis of uterus tumor using ultrasonic imaging and hysteroscopy, and computer-aided diagnosis using MRI/CT images. He has published about 100 journal and conference papers. He won the Second Prize of Young Researcher Paper Competition of IEEE EMBC Japan Chapter, the Most Excellent Abstract Award of Implantable Cardiac Device Winter Conference, Excellent Organization Award of IEEE iCAST2015, and the most excellent paper award in IEEE iCAST2017. He has participated and led major projects funded by Japanese Ministry of Education and Fukushima prefecture. He co-organized several international conferences and served as program chairs and program committee members for international conferences. He is serving as associate editors of Journal of Bioelectromagnetism, and Information Processing Transaction. He also collaborated with Nihon Kohden Corp., Fujifilm Corp., Boston Scientific Japan Corp., Medtronic Japan Corp., EKG Technology Corp., and Asahi Denshi Corp. for basic and application research.



## Program Schedule – Friday, June 14

<b>7:00 – 8:00</b>	<b>Registration</b>
<b>8:00 – 9:20</b>	<b>Session 1</b> <i>Emotion Recognition</i>
<b>9:20 – 10:40</b>	<b>Open ceremony and Keynote speech</b>
<b>10:40 – 11:00</b>	<b>Coffee Break</b>
<b>11:00 – 12:40</b>	<b>Session 2</b> <i>Human Behavior and Performance Monitoring</i>
<b>12:40 – 13:40</b>	<b>Lunch</b>
<b>13:40 – 15:40</b>	<b>Session 3</b> <i>Brain-Computer Interfaces</i>
<b>15:40 – 16:00</b>	<b>Tea Break</b>
<b>16:00 – 18:00</b>	<b>Session 4</b> <i>Robotics and Autonomous Systems &amp; Industrial Applications</i>
<b>18:00 - 20:00</b>	<b>Dinner</b>

## Program Schedule – Saturday, June 15

7:00 – 8:00	<b>Registration</b>
8:00 – 9:20	<b>Session 5</b> <i>Measurement systems</i>
9:20 – 10:40	<b>Session 6</b> <i>Student paper competition I</i>
10:40 – 11:00	<b>Coffee Break</b>
11:00 – 12:40	<b>Session 7</b> <i>Deep Learning</i>
12:40 – 13:40	<b>Lunch</b>
13:40 – 15:40	<b>Session 8</b> <i>Student paper competition II</i>
15:40 – 16:00	<b>Tea Break</b>
16:00 – 18:00	<b>Session 9</b> <i>Biomedical Systems</i>
18:00 - 18:30	<b>Best Paper Awards Ceremony and Closing Remarks</b>

**Friday, June 14**

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**7:00 – 8:00**

**Registration**

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**8:00 – 9:20**

**Session 1: Emotion Recognition**

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**Facial Emotion Recognition Based on Brain and Machine Collaborative Intelligence**

Wenfen Ling (Hangzhou Dianzi University, P.R. China);

Wanzeng Kong (Hangzhou Dianzi University, P.R. China);

Yanfang Long (Hangzhou Dianzi University, P.R. China)

Can Yang (Hong Kong University of Science and Technology, Hong Kong)

Xuanyu Jin (Hangzhou Dianzi University, P.R. China)

**EEG-based Emotion Recognition Under Convolutional Neural Network with Differential Entropy Feature Maps**

Yifan Li (University of Macau, Macao)

Chi Man Wong (University of Macau, Macao)

Yudian Zheng (University of Macau, Macao)

Feng Wan (University of Macau, Macao)

Peng Un Mak (University of Macao, Macao)

Sio Hang Pun (University of Macao, Macao)

Mang I Vai (University of Macau, P.R. China)

**Emotion Recognition with the Feature extracted from brain Networks**

Cunbo Li (University of Electronic Science and Technology of China, P.R. China)

**Neurofeedback with Compact Training Protocol on Chronic Stroke Rehabilitation: A Case Report**

Wenya Nan (Shanghai Normal University, P.R. China)

Mónica Santos (LASEEB, System and Robotics Institute, Portugal)

Vitor Oliveira (University of Lisbon, Portugal)

Dan Cai (Shanghai Normal University, P.R. China)

Agostinho Rosa (Dept. of Bioengineering University of Lisbon, Lisbon, Portugal)

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**9:20 – 10:40**

**Open ceremony and Keynote speeches**

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**Using Machine Learning and Neurophysiological Measurement to Better Understand the Human Brain in Real and Virtual Environments**

Professor Tzyy-Ping Jung (UC San Diego, USA)

**Computer-aided diagnosis systems for the detection of colorectal polyps and the analysis of colorectal tumor using colonoscopy images/videos**

Dr Xin Zhu (University of Aizu, Japan)

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**10:40 – 11:00**

**Coffee Break**

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**Friday, June 14**

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**11:00 – 12:40**

**Session 2: Human Behavior and Performance Monitoring**

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**Attribute Selection Techniques to Clustering the Entrepreneurial Potential of Student based on Academic Behavior**

Nova Rijati (Universitas Dian Nuswantoro, Indonesia)

Surya Sumpeno (Institute Teknologi Sepuluh Nopember, Indonesia)

Mauridhi Hery Purnomo (Institut of Technology Sepuluh Nopember, Indonesia)

**The Different Patterns of Reward Magnitude: A Scalp EEG Research**

Qin Tao (University of Electronic Science and Technology of China, P.R. China)

**Positive Emotion Impairs Verbal Working Memory Updating: A Brain Network Study**

Siyu Zhai (Tianjin University, P.R. China)

**Influence of Stimuli Color Combination on Online SSVEP-based BCI Performance**

Xiaodong Li (University of Hong Kong, Hong Kong)

Xiaojun Wang (University of Hong Kong, Hong Kong)

Chi Man Wong (University of Macau, Macao)

Rongwei Wen (University of Hong Kong, Hong Kong)

Feng Wan (University of Macau, Macao)

Yong Hu (University of Hong Kong, Hong Kong)

**sEMG-based lip shapes recognition**

Mingfeng Tang (Hangzhou Dianzi University, P.R. China)

Jianhai Zhang (Hangzhou Dianzi University, P.R. China)

Li Zhu (Xiamen University, P.R. China)

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**12:40 – 13:40**

**Lunch**

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**13:40 - 15:40**

**Session 3: Brain-Computer Interfaces**

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**Improved RCSP and AdaBoost-based classification for Motor-Imagery BCI**

Yangyang Miao (East China University of Science and Technology, P.R. China)

Feiyu Yin (East China University of Science and Technology, P.R. China)

Cili Zuo (East China University of Science and Technology, P.R. China)

Xingyu Wang (East China University of Science and Technology, P.R. China)

Jing Jin (East China University of Science and Technology, P.R. China)

**Three-class Motor Imagery Classification Based on FBCSP Combined with Voting Mechanism**

Li Bo (Shanghai University, P.R. China)

Banghua Yang (Shanghai University, P.R. China)

Cuntai Guan (Nanyang Technological University, Singapore)

Hu Chenxiao (Shanghai University, P.R. China)

### **Motor imagery signal classification based on transfer learning**

Banghua Yang (Shanghai University, P.R. China)

Minmin Zheng (Shanghai University, P.R. China)

Cuntai Guan (Nanyang Technological University, Singapore)

Li Bo (Shanghai University, P.R. China)

### **Enhancement of motor cortex EEG during motor imagery: a visual feedback training study**

Sifan He (Yanshan University, P.R. China)

Ningning Zhang (Yanshan University, P.R. China)

Changmeng Zhang (Yanshan University, P.R. China)

Zihao Fu (Yanshan University, P.R. China)

Xiaoling Chen (Yanshan University, P.R. China)

Ping Xie (Yanshan University, P.R. China)

### **EEG Controlled Automated Writing Robotic Arm Based on Steady State Visually Evoked Potential**

Xuequan Zhu (Tianjin University of Technology, P.R. China)

Meng Mu (Zhonghuan Information College, P.R. China)

Abdelkader Nasreddine Belkacem (UAE University, United Arab Emirates)

Duk Shin (Tokyo Polytechnic University, Japan)

Rui Xu (Tianjin University, P.R. China)

Chao Chen (Tianjin University of Technology, P.R. China)

Kun Wang (Tianjin University, P.R. China)

Zhongpeng Wang (Tianjin University, P.R. China)

Changming Wang (Capital Medical University, P.R. China)

### **Modeling Strategies and Spatial Filters for Improving the Performance of P300-speller within and across Individuals**

Tao Wang (Tianjin University, P.R. China)

Yufeng Ke (Tianjin University, P.R. China)

Linghan Kong (Tianjin University, P.R. China)

Pengxiao Liu (Tianjin University, P.R. China)

Jinzhao Xu (Tianjin University, P.R. China)

Wentao Liu (Tianjin University, P.R. China)

Xingwei An (Tianjin University, P.R. China)

Minpeng Xu (Tianjin University, P.R. China)

Dong Ming (Tianjin University, P.R. China)

## Friday, June 14

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**15:40 – 16:00**

**Tea Break**

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**15:30 – 16:30**

**Session 4: Robotics and Autonomous Systems & Industrial Applications**

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**Cooperative Multi-agent for The End-Effector Position of Robotic Arm Based on Consensus and PID Controller**

Arif Nugroho (Institut Teknologi Sepuluh Nopember, Indonesia)

Eko Mulyanto Yuniarno (Institut Teknologi Sepuluh November, Indonesia)

Mauridhi Hery Purnomo (Institut of Technology Sepuluh Nopember, Indonesia)

**Design of Visual Gaze Target Locating Device Based on Depth Camera**

Yuxin Liu (Chongqing University, P.R. China)

**Path planning and trajectory tracking of a wheeled mobile robot using bio-inspired optimization algorithms and PID control**

Ata Jahangir Moshayedi (Assoc. Prof, P.R. China)

Liefia Liao (Prof, USA); Amin Abbasi (MSC, USA)

Shuai Li (Hong Kong Polytechnic University, Hong Kong)

**Phased transducer and drive system design**

Hao Zhang (Tianjin Medical University, P.R. China)

Yanqiu Zhang (Tianjin Medical University, P.R. China)

Xiqi Jian (Tianjin Medical University, P.R. China)

**Predicting Electricity Usage Based on Deep Neural Network\***

Ran Wei (School of Life Sciences, Tianjin University of Technology, Tianjin, China)

Qirui Gan (Tianjin Polytechnic University Tianjin, P.R. China)

Huiquan Wang (School of Life Sciences, Tianjin University of Technology, Tianjin, China)

Jinhai Wang (School of Life Sciences, Tianjin University of Technology, Tianjin, China)

Xin Dang (Tianjin Polytechnic University, P.R. China)

**Redundant Reader Elimination in large-scale IoT City Networks**

Haoning Shi (Tianjin Polytechnic University, P.R. China)

Huiquan Wang (Tianjin Polytechnic University, P.R. China)

Raad Raad (University of Wollongong, Australia)

Saeid Iranmanesh (University of Wollongong, Australia)

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**18:00 – 20:00**

**Conference Dinner**

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# Saturday, June 15

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**7:00 – 8:00**  
**Registration**

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**8:00 – 9:20**  
**Session 5: Measurement Systems**

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**Texture Estimation Using Thermography and Machine Learning**

Tamas Aujeszký (New York University Abu Dhabi, United Arab Emirates)

Georgios Korres (New York University Abu Dhabi, United Arab Emirates)

Mohamad Eid (NYU, USA)

Farshad Khorrami (New York University, USA)

**Portable Image Based Moon Date Detection And Deceleration: System And Algorithm Code Sign**

Ata Jahangir Moshayedi (Assoc. Prof, P.R. China)

Shuai Li (Hong Kong Polytechnic University, Hong Kong)

Liefu Liao (Prof, USA); Zu-yan Chen (BSC, P.R. China)

**Knee medial loading evaluation in walking state via multiple predictors**

Shufeng Zhang (Tianjin University, P.R. China)

Rui Xu (Tianjin University, P.R. China)

Zhicai Li (Tianjin University, P.R. China)

Xin Zhao (Tianjin University, P.R. China)

Dong Ming (Tianjin University, P.R. China)

**Effect of walking variations on complementary filter based inertial data fusion for ankle angle measurement**

Lin Meng (Tianjin University, P.R. China)

Baihan Li (Tianjin University, P.R. China)

Craig Childs (University of Strathclyde, United Kingdom (Great Britain))

Arjan Buis (University of Strathclyde, United Kingdom (Great Britain))

Feng He (Tianjin University, P.R. China)

Dong Ming (Tianjin University, P.R. China)

## Saturday, June 15

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**9:20 – 10:40**

**Session 6: Student paper competition I**

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### **Convolutional Neural Network with Data Augmentation for Robust Myoelectric Control**

Xu Zhang (University of Science and Technology of China, P.R. China)

Tong Luo (University of Science and Technology of China, P.R. China)

Le Wu (University of Science and Technology of China, P.R. China)

Xi Chen (University of Science and Technology of China, P.R. China)

Xiang Chen (University of Science and Technology of China, P.R. China)

Xun Chen (University of Science and Technology of China, P.R. China)

### **A Novel Auditory-tactile P300-based BCI Paradigm**

Jing Jiang (National Key Laboratory of Human Factors Engineering, China Astronaut Research and Training Center, P.R. China)

Boyang Zhang (National University of Defense Technology, P.R. China)

Erwei Yin (Academy of Military Sciences China, P.R. China)

Chunhui Wang (China Astronaut Research and Training Center, P.R. China)

Baosong Deng (Academy of Military Sciences China, P.R. China)

### **A study of three target brain-computer interface based on auditory steady-state response**

Yao Wang (Tianjin Polytechnic University, P.R. China)

Kun Li (Tianjin Polytechnic University, P.R. China)

Xiaogang Chen (Chinese Academy of Medical Sciences and Peking Union Medical College, P.R. China)

Yaru Jia (Tianjin Polytechnic University, P.R. China)

Huiquan Wang (Tianjin Polytechnic University, P.R. China)

Ran Wei (Tianjing Polytechnic University, P.R. China)

### **A feasibility study of a video-based heart rate estimation method with convolutional neural network**

Rencheng Song (Hefei University of Technology, P.R. China)

Senle Zhang (Hefei University of Technology, P.R. China)

Juan Cheng (Hefei University of Technology, P.R. China)

Xun Chen (University of Science and Technology of China, P.R. China)

Yunfei Zhang (Senturing Technologies Ltd, Canada)

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**10:40 – 11:00**

**Coffee Break**

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## Saturday, June 15

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**11:00 – 12:40**

### **Session 7: Deep Learning**

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#### **Automatic Indonesian Image Caption Generation using CNN-LSTM Model and FEEH-ID Dataset**

Edy Mulyanto (Universitas Dian Nuswantoro & Institute Teknologi Sepuluh Nopember, Indonesia)

Esther Irawati Setiawan (Institut of Technology Sepuluh Nopember, Indonesia)

Eko Mulyanto Yuniarno (Institut Teknologi Sepuluh November, Indonesia)

Mauridhi Hery Purnomo (Institut of Technology Sepuluh Nopember, Indonesia)

#### **Improvement of Chatbot in Trading System for SMEs by Using Deep Neural Network**

Sathit Prasomphan (King Mongkut's University of Technology North Bangkok, Thailand)

#### **Classification of ERP Signals from Mild Cognitive Impairment Patients with Diabetes using Dual Input Encoder Convolutional Neural Network**

Dong Wen (Yanshan University, P.R. China)

Zhenhao Wei (Yanshan University, P.R. China)

Yanhong Zhou (Hebei Normal University of Science and Technology, P.R. China)

Zhijie Bian (Beijing Friendship Hospital, P.R. China)

Shimin Yin (The Rocket Force General Hospital of Chinese People's Liberation Army, P.R. China)

#### **A comparing network for the classification of steady-state visual evoked potential responses based on convolutional neural network**

Jiezhen Xing (Institute of Automation, Chinese Academy of Science, P.R. China)

Shuang Qiu (Institute of Automation, Chinese Academy of Science, P.R. China)

Chenyao Wu (University of Science & Technology Beijing, P.R. China)

Xuelin Ma (Institute of Automation, Chinese Academy of Science, P.R. China)

Jinpeng Li (Institute of Automation, Chinese Academy of Science, P.R. China)

Huiguang He (Institute of Automation, Chinese Academy of Science, P.R. China)

#### **Touchless Palmprint and Finger Texture Recognition: A Deep Learning Fusion Approach**

Angelo Genovese (Università degli Studi di Milano, Italy)

Vincenzo Piuri (Università degli Studi di Milano, Italy)

Fabio Scotti (Università degli Studi di Milano, Italy)

Sarvesh Vishwakarma (Università degli Studi di Milano, Italy)

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**12:20 – 13:30**

**Lunch**

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## Saturday, June 15

13:40 – 15:40

### Session 8: Student paper competition II

#### **A comparison of classification methods for recognizing single-trial ERP in RSVP-based brain-computer interfaces**

Xiaolin Xiao (Tianjin University, P.R. China)

Minpeng Xu (Tianjin University, P.R. China)

Dong Ming (Tianjin University, P.R. China)

#### **Comparison of Contributions between Facial and Neck Muscles for Speech Recognition Using High-Density Electromyography**

Yi Shao (Northeastern University & the CAS Key Laboratory of Human-Machine Intelligence-Synergy Systems, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, P.R. China)

Mingxing Zhu (University of Chinese Academy of Sciences & the CAS Key Laboratory of Human-Machine Intelligence-Synergy Systems, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, P.R. China)

Xiaochen Wang (University of Chinese Academy of Sciences, P.R. China)

Dan Wang (Tianjin University, P.R. China)

Zijian Yang (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, P.R. China)

Xin Wang (University of Chinese Academy of Sciences, P.R. China)

Lin Qi (Northeastern University, P.R. China)

Shixiong Chen (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, P.R. China); Guanglin Li (SIAT, P.R. China)

#### **Impact of Sink Node and Its Skewed Placement on Partial Connectivity in Wireless Sensor Networks**

Yun Wang (Bradley University, USA)

#### **An Approach to Estimate Emissivity For Thermography-based Material Recognition**

Tamas Aujeszky (New York University Abu Dhabi, United Arab Emirates)

Georgios Korres (New York University Abu Dhabi, United Arab Emirates)

Mohamad Eid (NYU, USA)

Farshad Khorrami (New York University, USA)

#### **Research on Human Error Analysis in the Simulated Main Control Room of Nuclear Power Plant Based on EEG Brain Network**

Hao Feng (Hebei University of Technology, P.R. China)

Ying Li (Hebei University of Technology, P.R. China)

Dongying Zhang (Hebei University of Technology, P.R. China)

Jipeng Li (Hebei University of Technology, P.R. China)

## Saturday, June 15

### **A Computation Resource Friendly Convolutional Neural Network Engine for EEG-based Emotion Recognition**

Yi Zhan (University of Macau, Macao)

Mang I Vai (University of Macau, P.R. China)

Shovan Barma (Indian Institute of Information Technology Guwahati, India)

Sio Hang Pun (University of Macau, Macao)

Jia Wen Li (University of Macau, Macao)

Peng Un Mak (University of Macau, Macao)

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**15:40 – 16:030**

**Tea Break**

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**16:00 – 18:00**

**Session 9: Biomedical Systems**

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### **Functional Corticomuscular Coupling Based on Bivariate Empirical Mode Decomposition - Multiscale Transfer Entropy**

Shengcui Cheng (Yanshan University, P.R. China)

Xiaoling Chen (Yanshan University, P.R. China)

Ping Xie (Yanshan University, P.R. China)

Xiaohui Pang (Yanshan University, P.R. China)

Xiaolin Bai (Yanshan University, P.R. China)

### **Research on Power-Assisted Strategy and Device Based on Muscle Synergy**

Lintao Hu (Chongqing University & Bioengineering College, P.R. China)

Wensheng Hou (Chongqing University, P.R. China)

### **P1 as an objective auditory rehabilitation assessing indicator for cochlear implant children**

Qi Zheng (Tianjin University, P.R. China)

Guangjian Ni (Tianjin University, P.R. China)

Yidi Liu (Beijing Children's Hospital, Capital Medical University, P.R. China)

Haihong Liu (Beijing Children's Hospital, Capital Medical University, P.R. China)

Zihao Xu (Tianjin University, P.R. China); Dong Ming (Tianjin University, P.R. China)

### **Pilot Study on Objective Evaluation of Human Auditory Ability using Hybrid EEG and fNIRS Acquisition**

Zihao Xu (Tianjin University, P.R. China)

Guangjian Ni (Tianjin University, P.R. China)

Han Siyang (Tianjin University, P.R. China)

Qi Zheng (Tianjin University, P.R. China)

Dong Ming (Tianjin University, P.R. China)

### **A Systematic Analysis of Noninvasive Sensory Feedback Reconstruction Methods for Upper Limb Amputee**

Wenjie Wang (Tianjin University, P.R. China)

Yuan Liu (Tianjin University, P.R. China)

Zhicai Li (Tianjin University, P.R. China)

Feng He (Tianjin University, P.R. China)

Dong Ming (Tianjin University, P.R. China)

## Saturday, June 15

### **Using Long Short-Term Memory Network for Recognizing Motor Imagery Tasks**

Xiaoyan Xu (Qilu University of Technology, P.R. China)

Fangzhou Xu (Qilu University of Technology, P.R. China)

Minglei Shu (Shandong Computer Science Center, P.R. China)

Yingchun Zhang (Qilu University of Technology, P.R. China)

Qi Yuan (Shandong Normal University, P.R. China)

Yuanjie Zheng (Shandong Normal University, P.R. China)

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**18:00 – 18:30****Best Paper Awards and Closing Remarks**

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