



The 11th International Conference on Awareness Science and Technology

December 7-9, 2020

Qingdao, China



Objective

The 11th International Conference on Awareness Science and Technology (iCAST 2020) is a major international conference to bring together researchers, engineers, and scientists from academia and industry working in awareness science and its applications, for discussion, exchanging ideas, opinions, and most importantly to present their works and latest results.

Special sessions on various subjects related to artificial intelligence, soft computing, intelligent systems, perception, cognitive science, psychology, data analysis, IoT are welcome. Individual submissions in the following area are invited.

Organizing Committee

Honorary Chair:

- Huajun Li, Academician of Chinese Academy of Engineering, Vice President of Ocean University of China

General Chairs:

- Junyu Dong, Ocean University of China
- Hui Yu, University of Portsmouth

PC Chairs:

- Gaige Wang, Ocean University of China
- Masafumi Matsuhara, Iwate Prefectural University
- Yusuke Manabe, Chiba Institute of Technology
- Xun Wang, Zhejiang Gongshang University

Special Session Chairs:

- Xinghui Dong, University of Manchester
- Guoqiang Zhong, Ocean University of China
- Cheng-Hsiung Hsieh, Chaoyang University of Technology

Publicity Chairs:

- Xin Sun, Ocean University of China
- Muwei Jian, Shandong University of Finance and Economics
- Takako Hashimoto, Chiba University of Commerce
- Shih-Chen Horng, Chaoyang University of Technology

Publication Chairs:

- Lin Qi, Ocean University of China
- Basabi Chakraborty, Iwate Prefectural University
- Xuguang Zhang, Hanzhou Dianzi University

Financial Chairs:

- Yong Wang, Ocean University of China

Local organizing Chairs:

- Feng Gao, Ocean University of China
- Shu Zhang, Ocean University of China
- Yong Zhao, Ocean University of China
- Yanwei Yu, Ocean University of China

Advisory Committee

- Hideyuki Takagi, Kyushu University
- Jun Sasaki, Iwate Prefectural University
- Ruo-Wei Hung, Chaoyang University of Technology
- Kei Ohnishi, Kyushu University
- Kurosh Madani, Paris University

Registration Chairs:

- Cui Xie, Ocean University of China
- Hao Fan, Ocean University of China
- Zhen Huang, GTCOM Digital Media & Entertainment Co., Ltd.

Steering Committee Chairs

- Rung-Chin Chen, Chaoyang University of Technology
- Qiangfu Zhao, University of Aizu
- Goutam Chakraborty, Iwate Prefectural University
- Robert Kozma, University of Memphis
- Tadahiko Murata, Kansai Univeristy

Sponsors

Technical Sponsor

- Systems, Man and Cybernetics Society

Supporters

- Technical Committee on Awareness Computing
- IEEE SMC Japan Chapter



中國海洋大學



Keynote Speakers



Recent Development in supervised Learning Algorithms in Spiking Neural Networks

Dr. Suresh Sundaram

Abstract

This talk presents recently developed supervised learning algorithms for a spiking neural network. In general, a spiking neural network closely emulates the structural and behavioral properties of the biological brain. This spiking neural network property motivated researchers to develop an advanced learning mechanism that closely mimics the human brain. The discontinuous nature of spike and dynamic plasticity of synapse makes it difficult to extend the existing learning principles to spiking neural networks. In this talk, we present two aspects of the spiking neural network. 1) Evolving spiking precise spike learning rule, which exhibits both local and global learning behavior. The learning algorithm is adaptive to the synaptic weight based on modulation factor from meta neuron and desired change in postsynaptic potential required. Since the learning algorithm captures the information in the one-shot, an online meta neuron-based learning algorithm evolves the structure and simultaneously adapts the parameter. 2) Time-varying long-term Synaptic Efficacy Function-based leaky-integrate-and-fire neuron model, referred to as SEFRON and its supervised learning rule for pattern classification problems. The time-varying synaptic efficacy function is represented by a sum of amplitude-modulated Gaussian distribution functions located at different times. Similar to the gamma-aminobutyric acid-switch phenomenon observed in a biological neuron that switches between excitatory and inhibitory postsynaptic potentials based on the physiological needs, the time-varying synapse model allows the synaptic efficacy (weight) to switch signs in a continuous manner. Finally, we highlight the interpretability of the spiking neural network.



Fairness in AI Service and Awareness for Computational Social Science

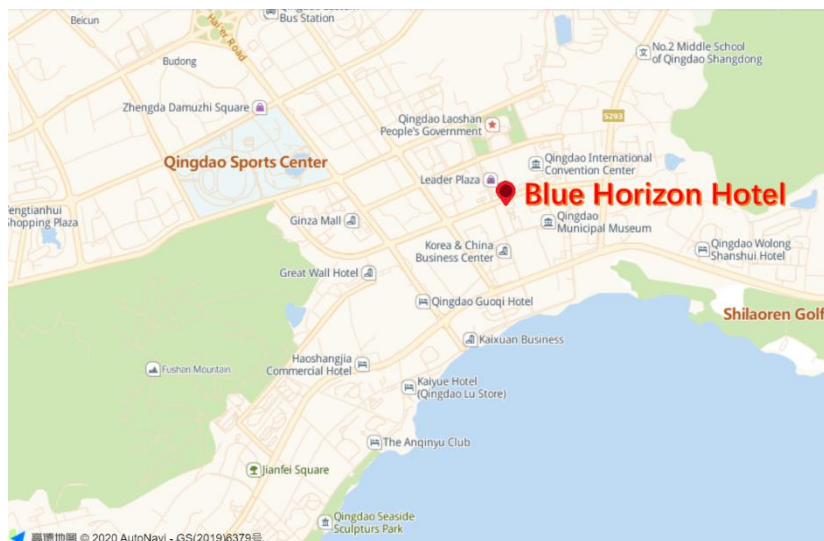
Tomoki Fukuma

Abstract

This talk aims to present an overview of the common pitfalls for applying machine learning techniques to real-world problems from a perspective of fairness. This talk mainly highlights the importance of diversity of the data and the problem related to algorithmic bias. In the age of information overload, machine learning becomes increasingly important in everyday life. There has been a growing interest in discovering the harmful effect of bias in machine learning and a way to take fairness into service. Based on our research and experience in the industry, we discuss open questions for further application.

Conference Venue

Qingdao Blue Horizon Hotel - No.9-2, Miaoling Road, Laoshan District,
Laoshan District, 266101 Qingdao, China



Program

First Day: Registration Day (7th December, Monday)			
Registration	13:00-18:00 CST		
Second Day (8th December, Tuesday)			
Opening Remarks	8:00-8:15 CST	BeihaiHall Chair: Junyu Dong	
Photo Session	8:15-8:30 CST		
Keynote Speaking	8:30-9:30 CST	BeihaiHall Chair: Tadahiko Murata	
Session	Parallel Session		
	9:30-9:50 CST	BeihaiHall Chair: Guoqiang Zhong	HuanghaiHall Chair: Cui Xie
	9:50-10:10 CST		
	10:10-10:30 CST		
Coffee Break	10:30-10:50 CST		
Session	Parallel Session		
	10:50-11:10 CST	BeihaiHall Chair: Gaige Wang	HuanghaiHall Chair: Yanwei Yu
	11:10-11:30 CST		
	11:30-11:50 CST		
Lunch	11:50-13:20 CST		
Keynote Speaking	13:30-14:30 CST	BeihaiHall Chair: Yanwei Yu	
Session	Parallel Session		
	14:30-14:50 CST	BeihaiHall Chair: Feng Gao	HuanghaiHall Chair: Hui Yu
	14:50-15:10 CST		
	15:10-15:30 CST		
Coffee Break	15:30-15:50 CST		
Session	Parallel Session		
	15:50-16:10 CST	BeihaiHall Chair: Shu Zhang	HuanghaiHall Special Session Chair: Yukari Shirota
	16:10-16:30 CST		
	16:30-16:50 CST		
	16:50-17:10 CST		
	17:10-17:30 CST		
	17:30-17:50 CST		
17:50-18:10 CST			

First Day: Registration Day (7th December, Monday)	
Registration 13:00-18:00 CST (14:00-19:00 JST 5:00-10:00 GMT) Venue: Qingdao BlueHorizon Hotel	
Second Day (8th December, Tuesday)	
Opening Remarks Venue: Qingdao BlueHorizon Hotel Beihai Hall(the 3rd floor) Microsoft Teams: To Be Announced Password: To Be Announced	
8:00-8:15 CST 9:00-9:15 JST 0:00-0:15 GMT	Qiangfu Zhao University of Aizu Junyu Dong Ocean University of China
Photo Session 8:15-8:30 CST (9:15-9:30 JST 0:15-0:30 GMT) Venue: Qingdao BlueHorizon Hotel Beihai Hall(the 3rd floor) Microsoft Teams: To Be Announced Password: To Be Announced	
Keynote Speaking Chair: Hideyuki Takagi Venue: Qingdao BlueHorizon Hotel Beihai Hall(the 3rd floor) Microsoft Teams: To Be Announced Password: To Be Announced	
8:30-9:30 CST 9:30-10:30 JST 0:30-1:30 GMT	Fairness in AI Service and Awareness for Computational Social Science Tomoki Fukuma TDAI LAB CEO
Session 1 Chair: Guoqiang Zhong Venue: Qingdao BlueHorizon Hotel Beihai Hall(the 3rd floor) Microsoft Teams: To Be Announced Password: To Be Announced	
9:30-9:50 CST 10:30-10:50 JST 1:30-1:50 GMT	An Efficient Scene Recognition System of Railway Crossing Kaisei Shimura, Yoichi Tomioka and Qiangfu Zhao University of Aizu E-mail: m5241107@u-aizu.ac.jp
9:50-10:10 CST 10:50-11:10 JST 1:50-2:10 GMT	CNN-based Camera Model Classification and Metric Learning Robust to JPEG Noise Mai Uchida and Yoichi Tomioka University of Aizu E-mail: ytomioka@u-aizu.ac.jp
10:10-10:30 CST 11:10-11:30 JST 2:10-2:30 GMT	Feature Extraction with Triplet Loss to Classify Disease on Leaf Data Nguyen Van Ty and Incheon Paik University of Aizu E-mail: paikic@u-aizu.ac.jp
10:30-10:50 CST 11:30-11:50 JST 2:30-2:50 GMT	Coffee Break

Session 2		Chair: Gaige Wang
Venue: Qingdao BlueHorizon Hotel Beihai Hall(the 3rd floor)		
Microsoft Teams: To Be Announced		Password: To Be Announced
10:50-11:10 CST 11:50-12:10 JST 2:50-3:10 GMT	A Lightweight Transformer with Convolutional Attention Kungan Zeng and Incheon Paik University of Aizu E-mail: paikic@u-aizu.ac.jp	
11:10-11:30 CST 12:10-12:30 JST 3:10-3:30 GMT	Analysis of COVID-19 Tweets, A Case Study with Dynamic Clustering Hidetoshi Ito and Basabi Chakraborty Iwate Prefectural University E-mail: basabi@iwate-pu.ac.jp	
11:30-11:50 CST 12:30-12:50 JST 3:30-3:50 GMT	3D Multi-scale DenseNet for Malignancy Grade Classification of Pulmonary Nodules Wang Weilun, Chakraborty Goutam and Chakraborty Basabi Iwate Prefectural University E-mail: basabi@iwate-pu.ac.jp	
11:50-13:20 CST 12:50-14:20 CST 3:50-5:20 GMT	Lunch Time	
Keynote Speaking		Chair: Goutam Chakraborty
Venue: Qingdao BlueHorizon Hotel Beihai Hall(the 3rd floor)		
Microsoft Teams: To Be Announced		Password: To Be Announced
13:30-14:30 CST 14:30-15:30 JST 5:30-6:30 GMT	Recent Development in supervised Learning Algorithms in Spiking Neural Networks Dr. Suresh Sundaram Department of Aerospace Engineering, Indian Institute of Science, Bangalore, India	
Session 3		Chair: Gao Feng
Venue: Qingdao BlueHorizon Hotel Beihai Hall(the 3rd floor)		
Microsoft Teams: To Be Announced		Password: To Be Announced
14:30-14:50 CST 15:30-15:50 JST 6:30-6:50 GMT	Improving Classification Accuracy of Detecting Error-Related Potentials using Two-stage Trained Neural Network Classifier Praveen Kumar Parashiva and Vinod A. P. Indian Institute of Technology Palakkad E-mail: vinod@iitpkd.ac.in	
14:50-15:10 CST 15:50-16:10 JST 6:50-7:10 GMT	Deep Learning-Based Industry Product Defect Detection with Low False Negative Error Tolerance Tsukasa Ueno, Qiangfu Zhao and Shota Nakada University of Aizu E-mail: m5241139@u-aizu.ac.jp	

15:10-15:30 CST 16:10-16:30 JST 7:10-7:30 GMT	Utility pole extraction processing from point cloud data from 3D measurement and its applications Zhiyi Gao, Akio Doi, Toru Kato, Hiroki Takahashi, Sakakibara Kenji, Hosokawa Tomonori and Harada Masahiro Iwate Prefectural University Takizawa E-mail: g236q202@s.iwate-pu.ac.jp
15:30-15:50 CST 16:30-16:50 JST 7:30-7:50 GMT	Coffee Break
Session 4 Chair: Shu Zhang Venue: Qingdao BlueHorizon Hotel Beihai Hall(the 3rd floor) Microsoft Teams: To Be Announced Password: To Be Announced	
15:50-16:10 CST 16:50-17:10 JST 7:50-8:10 GMT	You Only Look at Interested Cells: Real-Time Object Detection Based on Cell-Wise Segmentation Kai Su, Huitao Wang, Intisar Chowdhury, Qiangfu Zhao and Yoichi Tomioka University of Aizu E-mail: m5232109@u-aizu.ac.jp
16:10-16:30 CST 17:10-17:30 JST 8:10-8:30 GMT	Comparison Between Pre-defined Parallel Block-wise Detection and Modular Selective Network Huitao Wang, Kai Su, Intisar Chowdhunry, Qiangfu Zhao and Yoichi Tomioka University of Aizu E-mail: m5241105@u-aizu.ac.jp
16:30-16:50 CST 17:30-17:50 JST 8:30-8:50 GMT	Distributed Spatial Retrieval and Organization of Massive Ocean SpatioTemporal Data Kaizhong Tan, Bo Qin and Fudan Ren Ocean University of China E-mail: tkz@stu.ouc.edu.cn
16:50-17:10 CST 17:50-18:10 JST 8:50-9:10 GMT	Crowd counting by feature-level fusion of appearance and fluid force Dingxin Ma, Xuguang Zhang and Hui Yu Hangzhou Dianzi University E-mail: mdx@hdu.edu.cn
17:10-17:30 CST 18:10-18:30 JST 9:10-9:30 GMT	MwoA auxiliary diagnosis via RSN-based 3D deep multiple instance learning with spatial attention mechanism Xiang Li, Benzheng Wei, Tianyang Li and Na Zhang Center for Medical Artificial Intelligence E-mail: wbz99@sina.com
17:30-17:50 CST 18:30-18:50 JST	A Sequence-to-Sequence Model Based on Attention Mechanism for Wave Spectrum Prediction

9:30-9:50 GMT	Xiao Zeng, Lin Qi, Tong Yi and Tong Liu Ocean University of China E-mail: 18953570255@163.com
17:50-18:10 CST 18:50-19:10 JST 9:50-10:10 GMT	Stock Market Trend Prediction and Investment Strategy by Deep Neural Networks Mingze Shi and Qiangfu Zhao University of Aizu E-mail: m5231128@u-aizu.ac.jp
Second Day (8th December, Tuesday)	
Session 5 Chair: Cui Xie Venue: Qingdao BlueHorizon Hotel Huanghai Hall(the 3rd floor) Microsoft Teams: To Be Announced Password: To Be Announced	
9:30-9:50 CST 10:30-10:50 JST 1:30-1:50 GMT	Skeleton Guided Conflict-Free Hand Gesture Recognition for Robot Control Jiahao Xu, Jian Li, Shu Zhang, Cui Xie and Junyu Dong Ocean University of China E-mail: xujiahaojiahao@126.com
9:50-10:10 CST 10:50-11:10 JST 1:50-2:10 GMT	OFViser: An Interactive Visual System for Spatio-temporal Analysis of Ocean Front Jian Song, Cui Xie and Junyu Dong Ocean University of China E-mail: mastersj@stu.ouc.edu.cn
10:10-10:30 CST 11:10-11:30 JST 2:10-2:30 GMT	An Enhanced Invasive Weed Optimization in Resource-Constrained Project Scheduling Problem Wei Cai, Haojie Chen and Jian Zhang Southwest Jiaotong University E-mail: jerrysmail@263.net
10:30-10:50 CST 11:30-11:50 JST 2:30-2:50 GMT	Coffee Break
Session 6 Chair: Yanwei Yu Venue: Qingdao BlueHorizon Hotel Huanghai Hall(the 3rd floor) Microsoft Teams: To Be Announced Password: To Be Announced	
10:50-11:10 CST 11:50-12:10 JST 2:50-3:10 GMT	A Visual-SLAM based Line Laser Scanning System using Semantically Segmented Images Zhengwu Shi, Qingxuan Lyu, Shu Zhang, Lin Qi, Hao Fan and Junyu Dong Ocean University of China E-mail: shizhengwu@stu.ouc.edu.cn
11:10-11:30 CST 12:10-12:30 JST 3:10-3:30 GMT	Poker Watcher: Playing card detection based on EfficientDet and sandglass block Qianmin Chen, Eric Rigall, Xianglong Wang, Hao Fan and

	<p>Junyu Dong Ocean University of China E-mail: cqm@stu.ouc.edu.cn</p>
<p>11:30-11:50 CST 12:30-12:50 JST 3:30-3:50 GMT</p>	<p>Improving Visual-Inertial Odometry with Robust Outlier Rejection and Loop Closure Chenxin Jia, Ying Cao, Jian Yang, Yuan Rao, Hao Fan and Wenlin Yao Ocean University of China E-mail: jiachenxin@stu.ouc.edu.cn</p>
<p>11:50-13:20 CST 12:50-14:20 JST 3:50-5:20 GMT</p>	<p>Lunch Time</p>
<p>Session 7 Chair: Hui Yu Venue: Qingdao BlueHorizon Hotel Huanghai Hall(the 3rd floor) Microsoft Teams: To Be Announced Password: To Be Announced</p>	
<p>14:30-14:50 CST 15:30-15:50 JST 6:30-6:50 GMT</p>	<p>Rotation Axis Calibration in Linear Structural LightRotation Scanning System Zhihao Zhu, Jian Yang, Xianglong Wang, Guanqi Qi, Chuang Wu, Hao Fan, Lin Qi and Junyu Dong Ocean University of China E-mail: zhuzhihao@stu.ouc.edu.cn</p>
<p>14:50-15:10 CST 15:50-16:10 JST 6:50-7:10 GMT</p>	<p>Mesoscale Ocean Eddies Detection Using High-Resolution Network Xirong Lu, Shaoxiang Guo, Meng Zhang, Junyu Dong, Xueen Chen and Xin Sun Ocean University of China E-mail: luxirong@stu.ouc.edu.cn</p>
<p>15:10-15:30 CST 16:10-16:30 JST 7:10-7:30 GMT</p>	<p>Attention LSTM for Scene Graph Generation Zhichao Zhang and Junyu Dong Ocean University of China E-mail: 21180211091@stu.ouc.edu.cn</p>
<p>15:30-15:50 CST 16:30-16:50 JST 7:30-7:50 GMT</p>	<p>Coffee Break</p>
<p>Special Session Chair: Yukari Shirota Venue: Qingdao BlueHorizon Hotel Huanghai Hall(the 3rd floor) Microsoft Teams: To Be Announced Password: To Be Announced</p>	
<p>15:50-16:10 CST 16:50-17:10 JST 7:50-8:10 GMT</p>	<p>Intrinsic Meaning of Shapley Values in Regression Kenji Yamaguchi Ochanomizu University E-mail: yamaguchi.kenji@ocha.ac.jp</p>

16:10-16:30 CST 17:10-17:30 JST 8:10-8:30 GMT	A Fake News Dissemination Model Based on Updating Reliability and Doubt among Individuals Kento Yoshikawa, Takumi Awa, Risa Kusano, Hiroyuki Sato, Masatsugu Ichino and Hiroshi Yoshiura University of Electro-Communications E-mail: k-yoshikawa@uec.ac.jp
16:30-16:50 CST 17:30-17:50 JST 8:30-8:50 GMT	Modeling Low-risk Actions from Multivariate Time Series Data Using Distributional Reinforcement Learning Yosuke Sato and Jianwei Zhang Iwate University E-mail: zhang@iwate-u.ac.jp
16:50-17:10 CST 17:50-18:10 JST 8:50-9:10 GMT	Evaluation for ESD (Education for Sustainable Development) to achieve SDGs at University Shoki Sato, Takako Hashimoto and Yukari Shiota Chiba University of Commerce E-mail: takako@cuc.ac.jp
17:10-17:30 CST 18:10-18:30 JST 9:10-9:30 GMT	Indonesian Gender Equality Survey Analysis Using Feature Selection Based Clustering Takako Hashimoto, Kilho Shin, David Lawrence Shepard and Tetsuji Kuboyama Chiba University of Commerce E-mail: takako@cuc.ac.jp
17:30-17:50 CST 18:30-18:50 JST 9:30-9:50 GMT	Performance of Machine Learning Algorithms for IT Incident Management Mohammad Agus, Ruki Harwahu and Riri Fitri Sari UI E-mail: mohammad.agus@ui.ac.id