# CONFERENCE PROGRAM

IIP 2022

MAY 27-30, 2022
QINGDAO, CHINA

The 12th International Conference on

# INTELLIGENT INFORMATION PROCESSING

MAY
27-30, 2022

ON-LINE CONFERENCE

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**IFIP TC12**

**Technical Committee on Intelligence Science of Chinese Association for Artificial Intelligence (CAAI)**

**Shandong University of Science and Technology**

## ORGANIZATION COMMITTEES

### General Chairs

**Eunika Mercier-Laurent (France)**

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**Bo An (Singapore)**

## LOCAL ORGANIZATION COMMITTEES

### Organizing Chairs

**Yongquan Liang, Shandong University Of Science and Technology**

### General Secretary

**Shujuan Ji**

### Vice General Secretary

**Zhongying Zhao**

# WELCOME MESSAGE

Dear Colleagues,

Thank you for your support to the 12th IFIP International Conference on Intelligent Information Processing (IIP 2022). As the world proceeds quickly into the Information Age, it encounters both successes and challenges, and it is well recognized that intelligent information processing provides the key to solve many challenges in the Information Age. Intelligent Information Processing supports the most advanced techniques that are able to change human life and the world. However, the path to the success is never a straight one. Every new technology brings with it many challenging problems, and researchers are in great demand to tackle the challenging problems. This conference provides a forum for engineers and scientists in research institutes, universities and industries to report and discuss their latest research progresses in all aspects of intelligent information processing.

We received more than 56 papers, of which 37 papers are included in this program as regular papers and 6 as short papers. All papers submitted were reviewed by three reviewers. We are grateful for the dedicated work of both authors and reviewers.

A conference such as this cannot succeed without help from many individuals who contributed their valuable time and expertise. We want to express our sincere gratitude to the Program Committee members and referees, who invested many hours for reviews and deliberations. They provided detailed and constructive review comments that have significantly improved paper quality of the papers included in these proceedings.

We are very grateful to have the sponsorship of the following organizations: IFIP TC12, Shandong University of Science and Technology, Institute of Computing Technology, Chinese Academy of Sciences. We specially thank Qingtian Zeng, Yongquan Liang, Shujuan Ji and Zhongying Zhao for organizing the conference and Peiling Li, Xiaoli Guan for carefully checking the proceedings.

Finally, we hope you find this volume inspiring and informative. We wish that the research results reported in the proceedings will lead to exciting new findings in the years to come.

Zhongzhi Shi

Jean-daniel Zucker

Bo An

# ZOOM GUIDELINE

## Time Zone

- China Standard Time (CST)
- UTC/GMT+08:00

Please make sure that both the clock and the time zone on your computer are set to the correct China Time.

## Download ZOOM

- For Users from Mainland China → https://www.zoom.com.cn/download
- For General Users → https://zoom.us/support/download

## Sign In And Join

- Join a Meeting without Signing in → A Zoom account is not required if you join a meeting as a participant, but you cannot change the virtual background or edit the profile picture
- Sign in with a Zoom Account → All the functions are available

## Tips

- A computer with an internet connection (wired connection recommended)
- USB plug-in headset with a microphone (recommended for optimal audio quality)
- Webcam (optional): built-in or USB plug-in
- Stable Internet Connection
- Quiet Environment
- Proper Lighting
- Formal Dress

→ Zoom Help Center
https://support.zoom.us

# PRESENTATION GUIDELINE

## VOICE CONTROL RULES

- The host will mute all participants while entering the meeting.
- Speakers can unmute microphone when it is turn for his or her presentation.
- Q&A goes after each speaker, the participant can raise questions.

## ORAL PRESENTATION

- Please make sure your presentation is well timed.
- Please join the meeting room 10 minutes in advance.
- The conference encourages all presenters to make live oral presentations.

## CONFERENCE RECORDING

- The whole conference will be recorded. We appreciate your proper behavior and appearance.
- The recording will be used for the conference reports among the committee. It won't be distributed to or shared with anyone else, and it shall not be used for commercial nor illegal purpose. It will only be recorded by the staff, the presenters are not allowed to record.

## FREE ACCESS PROCEEDING

- Please visit http://www.intsci.ac.cn/iip2022/Proceedings/ to get free access to the conference proceeding. (valid from May 15th to June 15th)

### STEP 1

Open the **PowerPoint file** you want to present in advance.

### STEP 2

Click **Start Video** button to open up your webcam .

### STEP 3

Click **Share Screen** to share slides check the Share Sound option to share computer sounds.

### STEP 4

Switch back to PowerPoint and begin the presentation by selecting the **Play from Start.**

# KEYNOTE SPEAKER

Zoom ID: 839 4117 7533 (Room 1)

## Jie Lu


- Director of Australian Artificial Intelligence Institute
- University of Technology Sydney, Australia

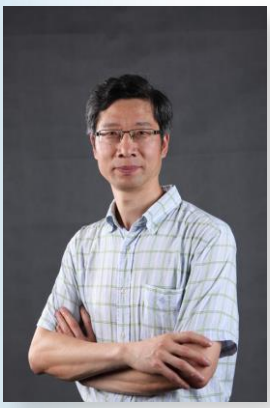

**Bio:** Distinguished Professor Jie Lu is a world-renowned scientist in the field of computational intelligence, primarily known for her work in concept drift, transfer learning, recommender systems, and decision support systems. She is an IEEE Fellow, IFSA Fellow, and Australian Laureate Fellow. Currently, Prof Lu is the Director of the Australian Artificial Intelligence Institute (AAII) and Associate Dean (Research Excellence) at the Faculty of Engineering and Information Technology, University of Technology Sydney (UTS). She has published 500 papers in leading journals and conferences; won 10 Australian Research Council (ARC) Discovery Projects and over 20 industry projects; and supervised 46 doctoral students to completion. Prof Lu serves as Editor-In-Chief for Knowledge-Based Systems and International Journal of Computational Intelligence Systems, and is a recognized keynote speaker, delivering 30 keynote speeches at international conferences. She is the recipient of the IEEE Transactions on Fuzzy Systems Outstanding Paper Award (2019), the Computer Journal Wilkes Award (2018), Australia's Most Innovative Engineer Award (2019), and the UTS Chancellor's Medal for Research Excellence (2019).

## Machine Learning for Decision Support in Complex Environments

**Abstract:** The research will present how machine learning can innovatively and effectively learn from data to support data-driven decision-making in uncertain and dynamic situations. A set of new fuzzy transfer learning theories, methodologies and algorithms will be presented that can transfer knowledge learnt in one or more source domains to target domains by building latent space, mapping functions and self-training to overcome tremendous uncertainties in data, learning processes and decision outputs (classification and regression). Another set of concept drift theories, methodologies and algorithms will be discussed about how to handle ever-changing dynamic data stream environments with unpredictable stream pattern drifts by effectively and accurately detecting, understanding, and adapting concept drift in an explanatory way, indicating when, where and how concept drift occurs and reacting accordingly. These new developments enable advanced machine learning and there-fore enhance data-driven prediction and decision support systems in uncertain and dynamic real-world environments.

# KEYNOTE SPEAKER

Zoom ID: 839 4117 7533 (Room 1)



## Xin Yao


- Research Institute of Trustworthy Autonomous Systems (RITAS)
- Department of Computer Science and Engineering, Southern University of Science and Technology, China
- School of Computer Science, University of Birmingham, UK

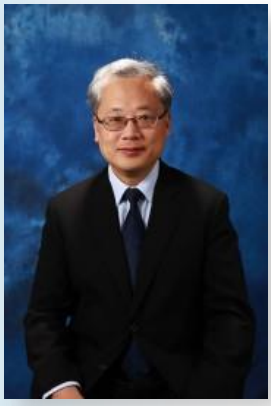

**Bio:** Xin Yao is a Chair Professor of Computer Science at the Southern University of Science and Technology, Shenzhen, China, and a part-time Professor of Computer Science at the University of Birmingham, UK. His major research interests include evolutionary computation, ensemble learning and search-based software engineering. More recently, he has been working on AI ethics, especially fairness. He is an IEEE fellow, a former (2014-15) president of IEEE Computational Intelligence Society (CIS) and a former (20003-08) Editor-in-Chief of IEEE Transactions on Evolutionary Computation. His research work won the 2001 IEEE Donald G. Fink Prize Paper Award, 2010, 2016 and 2017 IEEE Transactions on Evolutionary Computation Outstanding Paper Awards, 2010 BT Gordon Radley Award for Best Author of Innovation (Finalist), 2011 IEEE Transactions on Neural Networks Outstanding Paper Award, and many other best paper awards. He received a Royal Society Wolfs on Research Merit Award in 2012, the IEEE CIS Evolutionary Computation Pioneer Award in 2013, and the 2020 IEEE Frank Rosenblatt Award.

## Making Machine Learning Fairer

**Abstract:** As the rapid development of artificial intelligence (AI) and its real-world applications in recent years, AI ethics has become increasingly important. It is no longer a nice feature to consider, but a must for both AI research and applications. First, this talk first tries to recall what classical ethics is about from an historical perspective. It tries to understand how technology ethics and AI ethics grow out of the broad ethics field. Specific features of AI ethics will be discussed. Second, a brief review of current research into AI ethics will be given. Key research topics will be extracted from a large number of reports to give a more concrete picture of most important issues covered in AI ethics. Third, we will examine the fairness issue in AI ethics and demonstrate how an algorithmic approach could help machine learning to be fairer. In other words the results from machine learning will have less biases. Finally, some open research questions will be touched upon.

# INVITED SPEAKER

Zoom ID: 839 4117 7533 (Room 1)



## Ho-fung Leung


- Professor, Department of Computer Science and Engineering, The Chinese University of Hong Kong
- Professor (by courtesy), Department of Sociology, The Chinese University of Hong Kong


**Bio:** Professor Ho-fung Leung is a Professor in the Department of Computer Science and Engineering and a Professor (by courtesy) in the Department of Sociology at The Chinese University of Hong Kong. He is the Director of the MSc Programme in Computer Science. His research interests cover various aspects centring around artificial intelligence, including multiagent systems (reinforcement learning, emergence phenomena, and evolution dynamics), game theoretic analysis, ontologies (knowledge graphs), and big data analytics. Professor Leung has authored more than 250 publications, including 5 research monographs, and 5 edited volumes.

Professor Leung was the chairperson of ACM (Hong Kong Chapter) in 1998. He is a Chartered Fellow of the BCS, a Fellow of the HKIE, and a full member the HKCS. He is a Chartered Engineer registered by the Engineering Council.

Professor Leung received his BSc and MPhil degrees in Computer Science from The Chinese University of Hong Kong, and his PhD degree from University of London with DIC (Diploma of Imperial College) in Computing from Imperial College London.

## Multiagent Reinforcement Learning: Models and Modelling

**Abstract**: In this talk we shall present our recent works on multi-agent reinforcement learning. In multi-agent reinforcement learning, agents interact with one another in a multi-agent system. They continuously revise their decision policies by learning from their experiences of interacting with other agents. Generally, a social norm of action will emerge at some point. I shall describe our research results in multi-agent reinforcement learning, and discuss what we can learn from these results. I shall also highlight some theoretical re-sults on mathematical modelling of multi-agent reinforcement learning.

# INVITED SPEAKER

Zoom ID: 839 4117 7533 (Room 1)

## Bao-Liang Lu


- Center for Brain-Like Computing and Machine Intelligence
- Department of Computing Science and Engineering
  Shanghai Jiao Tong University, China


**Bio:** Bao-Liang Lu received the Ph. D. degree in electrical engineering from Kyoto University, Kyoto, Japan, in 1994. From April 1994 to March 1999, He was a Frontier Researcher at the Bio-Mimetic Control Research Center, the Institute of Physical and Chemical Research (RIKEN), Japan. From April 1999 to August 2002, he joined the RIKEN Brain Science Institute, Japan, as a research scientist. Since August 2002, he has been a full professor at the Department of Computer Science and Engineering, Shanghai Jiao Tong University, China. He is the directors of the Center for Brain-Like Computing and Machine Intelligence, the Key Laboratory of Shanghai Education Commission Intelligent Interaction and Cognitive Engineering and Ruijin-Mihoyo Laboratory, Ruiji Hospital, Shanghai Jiao Tong University School of Medicine. He is the Co-director of Center for Brain-Machine Interface and Neuromodulation, Ruiji Hospital, Shanghai Jiao Tong University School of Medicine. His research interests include brain-like computing, deep learning, emotion AI, and affective brain-computer interface. He received 2018 IEEE Transactions on Autonomous Mental Development Outstanding Paper Award, 2020 First Prize of Wu Wen Jun AI Science and Technology Award, and 2021 Best of IEEE Transactions on Affective Computing Paper Collection. He was the past President of the Asia Pacific Neural Network Assembly and the general Chair of the 18th International Conference on Neural Information Processing. He is Associate Editors of IEEE Transactions on Cognitive and Developmental Systems and Journal of Neural Engineering and the IEEE Fellow.

## Affective Brain-Computer Interface and Applications

**Abstract**: Affective brain-computer interface (aBCI) is a type of huamn-computer in-terface that can recognize and/or regulate emotions. In particular, according to whether to regulate emotions, aBCI can be divided into two categories. The first category is emotion recognition BCI, which can recognize emotions based on the brain signals collected by external devices. The second category is emotion recognition and regulation BCI, which can not only recognize emotions but also regulate emotions by stimulating specific brain areas. Cur-rently, most research is focused on emotion recognition BCI. The study on emotion regulation BCI is highly limited. This talk will introduce our recent work on emotion recognition BCI and applications. Specifically, we will in-troduce a multimodal affective BCI framework of combining EEG signals and eye movement signals, a plug-and-play domain adaptation for cross-subject EEG-based Emotion Recognition, GAN-based methods for EEG data augmentation, and the practical application of aBCI to depression evaluation.

# INVITED SPEAKER

Zoom ID: 839 4117 7533 (Room 1)

## Dongrui Wu

- School of Artificial Intelligence and Automation,
  Huazhong University of Science and Technology, China

**Bio:** Dongrui Wu received a B.E in Automatic Control from the University of Science and Technology of China, Hefei, China, in 2003, an M.Eng in Electrical and Computer Engineering from the National University of Singapore in 2006, and a PhD in Electrical Engineering from the University of Southern California, Los Angeles, CA, in 2009. He is now Professor and Deputy Director of the Key Laboratory of the Ministry of Education for Image Processing and Intelligent Control, School of Artificial Intelligence and Automation, Huazhong University of Science and Technology, Wuhan, China.

Prof. Wu's research interests include affective computing, brain-computer interface, computational intelligence, and machine learning. He has more than 170 publications (8,200+ Google Scholar citations; h=45), including a book ``Perceptual Computing'' (Wiley-IEEE Press, 2010), and 11 patents. He received the IEEE Computational Intelligence Society (CIS) Outstanding PhD Dissertation Award in 2012, the IEEE Transactions on Fuzzy Systems Outstanding Paper Award in 2014, the North American Fuzzy Information Processing Society (NAFIPS) Early Career Award in 2014, the IEEE Systems, Man and Cybernetics (SMC) Society Early Career Award in 2017, the IEEE SMC Society Best Associate Editor Award in 2018, the USERN Prize in Formal Sciences in 2020, the IEEE International Conference on Mechatronics and Automation Best Paper Award in 2020, the IEEE Transactions on Neural Systems and Rehabilitation Engineering Best Paper Award in 2021, and the Chinese Association of Automation Early Career Award in 2021. He was a selected participant of the Heidelberg Laureate Forum in 2013, the US National Academies Keck Futures Initiative (NAKFI) in 2015, and the US National Academy of Engineering German-American Frontiers of Engineering (GAFOE) in 2015. His team won the First Prize of the China Brain-Computer Interface Competition in three successive years (2019-2021).

Prof. Wu is Associate Vice President for Human-Machine Systems of the IEEE SMC Society, the Editor-in-Chief of the IEEE SMC Society eNewsLetter, and an Associate Editor of the IEEE Transactions on Fuzzy Systems (2011-2018; 2020-), the IEEE Transactions on Human-Machine Systems (since 2014), the IEEE Computational Intelligence Magazine (since 2017), and the IEEE Transactions on Neural Systems and Rehabilitation Engineering (since 2019).

## Accurate, Secure and Privacy-Preserving Brain-Computer Interfaces

**Abstract**: Brain-computer interface (BCI) is a direct communication pathway between the brain and an external device. Because of individual differences and non-stationarity of brain signals, a BCI usually needs subject-specific calibration, which is time-consuming and user unfriendly. Sophisticated machine learning approaches can help reduce or even completely eliminate calibrations, improving the utility of BCIs. Recent studies also found that machine learning models in BCIs are vulnerable to adversarial attacks, and brain signals also contain lots of private information, so the security and privacy of BCIs are also important considerations in their commercial applications. This talk will introduce transfer learning approaches for expedite BCI calibration, and their adversarial attack and privacy protection approaches. The ultimate goal is to implement accurate, secure and privacy-preserving BCIs.

# INVITED SPEAKER

Zoom ID: 839 4117 7533 (Room 1)

## Yang Yu

• School of Artificial Intelligence, National Key Laboratory for Novel Software Technology, Nanjing University, China

**Bio:** Yang Yu is a Professor of Artificial Intelligence School, Nanjing University. His research interesting is in reinforcement learning. He received CCF-IEEE Early Career Scientist Award in 2020, was recognized as an AI's 10 to Watch by IEEE Intelligent Systems in 2018, received Early Career Award by PAKDD in 2018, and invited to give an Early Career Spotlight talk in IJCAI'18.

### General Real-world Decision-making by Offline Reinforcement Learning

**Abstract:** While reinforcement learning (RL) has shown super-human decision-making ability in playing games, RL was extremely difficult to come to the real world. An apparent cause of the difficulty is the missing of a cost-free playing ground, i.e., an environment model, for RL. However, learning an effective environment model from data is inhibited by high compounding error, which was theoretically proved as the simulation lemma found in 2002. Nearly 20 years later, we now have established a new theory with compounding error eliminated, which allows us to learn effective environment models. We show that environment model learning enables truly offline RL, which makes zero trial errors to train a policy. We also show that such offline RL can be applied in a wide range of real-world tasks.

# INVITED SPEAKER

Zoom ID: 839 4117 7533 (Room 1)

## Chuan Shi

• School of Computer Science
Beijing University of Posts and Telecommunications, China

**Bio:** Chuan Shi is the professor in Beijing University of Posts and Telecommunications, deputy director of Beijing Key Lab of Intelligent Telecommunication Software and Multimedia. The main research interests include data mining, machine learning, artificial intelligence and big data analysis. He has published more than 100 refereed papers, including top journals and conferences in data mining and machine learning, such as IEEE TKDE, ACM TKDD, KDD, WWW, NeurIPS, AAAI and IJCAI. He has been honored as the best paper award in ADMA 2011/ADMA 2018 and the best paper nomination in the WebConf 2021. He has won several awards, such as the second prize of Natural Science of Beijing/CCF (1st) and the first prize of artificial intelligence science and technology progress of Wu Wenjun (3rd).

### Rethinking the Learning Mechanism of GNN

**Abstract:** In recent years, researchers began to study how to apply neural network to graph data, forming a research boom of graph neural network (GNN). Most GNNs are equivalent to a low-pass filter, which aggregates the feature in-formation of neighbor nodes along the network structure, and realizes the ef-fective fusion of network structure and attribute features. Although GNNs have achieved great success in academic research and practical applications, they still leave some open problems on learning mechanisms of GNNs. In this talk, we will rethink some key operations of GNNs and report some re-cent progress in this field. This talk will focus on, but not limit to, following questions: fusion mechanism of structure and features, uniform message ag-gregation mechanism, the role of low-pass filtering, and reliable graph struc-ture for GNN. The answers to questions will give the insightful investigation on the learning mechanism of GNNs and guide us design better GNNs.

## DEVICE TESTING | May 27, 2022

China Standard Time (CST) UTC/GMT+08:00

| Time | ZOOM ID: 839 4117 7533 (Room 1) | ZOOM ID: 831 5314 0997 (Room 2) |
|---|---|---|
| 10:00-12:00 | Speakers of Session I&II | Speakers of Session III&IV |
| 14:00-17:00 | Speakers of Session V&VI | Speakers of Session VII&VIII |

All the plenary speakers/presenters/session chairs are suggested to attend the test sessions based on the time table above; you can enter the room at your appropriate local time between 10:00-17:00 (CST), May 27, 2022.

## NAMING MANNER

Please Rename by Entering the Meeting Room

| Role | Format | Example |
|---|---|---|
| Session Chair | Session Number-SC-Name | S1-SC-Abby |
| Presenter | Session Number-Paper ID-Name | S1-IP001-Alex |
| Listener | Listener-Name | Listener-Aron |

# AGENDA | May 28, 2022

China Standard Time (CST) UTC/GMT+08:00

| TIME | ACTIVITY | ZOOM ID: 839 4117 7533 (Room 1) |
|---|---|---|
| **Opening Ceremony \| Chair: Yongquan Liang, Shandong University of Science and Technology** | | |
| 09:00-09:15 | **Greetings from General Chairs and Welcome from University**<br>Qingtian Zeng, Shandong University of Science and Technology | |
| | **Introduction to IIP2022 Program**<br>Zhongzhi Shi, Chinese Academy of Sciences | |
| **Keynote Speeches \| Chair: Zhongzhi Shi, Chinese Academy of Sciences** | | |
| 09:15-10:00 | **Making Machine Learning Fairer**<br>Xin Yao, Southern University of Science and Technology, China & University of Birmingham, UK | |
| 10:00-10:15 | Break Time | |
| 10:15-11:00 | **Machine Learning for Decision Support in Complex Environments**<br>Jie Lu, University of Technology Sydney, Australia | |
| **Invited Speech \| Chair: Zhongzhi Shi, Chinese Academy of Sciences** | | |
| 11:00-11:45 | **Multiagent Reinforcement Learning: Models and Modelling**<br>Ho-fung Leung, The Chinese University of Hong Kong, China | |
| 11:45-13:30 | Lunch Break | |

| TIME | ACTIVITY | |
|---|---|---|
| **Parallel Sessions** | | |
| 13:30-15:30 | **ZOOM ID: 839 4117 7533 (Room 1)**<br>**Session I-Machine Learning & Game Theory and Emotion** | **ZOOM ID: 831 5314 0997 (Room 2)**<br>**Session II-Data Mining** |
| 15:30-15:45 | Break Time | |
| 15:45-17:45 | **ZOOM ID: 839 4117 7533 (Room 1)**<br>**Session III-Machine Learning & Multiagent Systems** | **ZOOM ID: 831 5314 0997 (Room 2)**<br>**Session IV-Pattern Recognition & Image Processing** |

# AGENDA | May 29, 2022

China Standard Time (CST) UTC/GMT+08:00

| TIME | ACTIVITY | ZOOM ID: 839 4117 7533 (Room 1) |
|---|---|---|
| **Invited Speeches \| Chair: Yongquan Liang, Shandong University of Science and Technology** | | |
| 08:30-09:15 | **Rethinking the Learning Mechanism of GNN**<br>Chuan Shi, Beijing University of Posts and Telecommunications, China | |
| 09:15-10:00 | **Affective Brain-Computer Interface and Applications**<br>Baoliang Lu, Shanghai Jiao Tong University, China | |
| 10:00-10:15 | Break Time | |
| 10:15-11:00 | **Accurate, Secure and Privacy-Preserving Brain-Computer Interfaces**<br>Dongrui Wu, Huazhong University of Science and Technology, China | |
| 11:00-11:45 | **General Real-world Decision-making by Offline Reinforcement Learning**<br>Yang Yu, Nanjing University, China | |
| 11:45-13:30 | Lunch Break | |

| TIME | ACTIVITY | |
|---|---|---|
| **Parallel Sessions** | | |
| 13:30-15:30 | **ZOOM ID: 839 4117 7533 (Room 1)**<br>**Session V-Pattern Recognition** | **ZOOM ID: 831 5314 0997 (Room 2)**<br>**Session VI-Social Computing & Blockchain Technology** |
| 15:30-15:45 | Break Time | |
| 15:45-17:05 | **ZOOM ID: 839 4117 7533 (Room 1)**<br>**Session VII-Applications** | **ZOOM ID: 831 5314 0997 (Room 2)**<br>**Session VIII-Image Processing** |

| TIME | ACTIVITY | ZOOM ID: 839 4117 7533 (Room 1) |
|---|---|---|
| **Closing Ceremony \| Chair: Yongquan Liang, Shandong University of Science and Technology** | | |
| 17:05-17:30 | **IIP 2022 Summarization**<br>Zhongzhi Shi, Chinese Academy of Sciences<br>**Message of IIP 2024 Organizer**<br>Xin Yao, Southern University of Science and Technology | |

## Session I-Machine Learning & Game Theory and Emotion

Session Chair: **Huifang Ma**, Northwest Normal University

May 28 | China Standard Time (CST) UTC/GMT+08:00

**Zoom ID: 839 4117 7533 (Room 1)**
https://us02web.zoom.us/j/83941177533

| | | |
|---|---|---|
| **13:30-13:50** | **#29** | **Title:** An AdaBoost Based- Deep Stochastic Configuration Network<br>**All Authors:** Chenglong Zhang, Shifei Ding, Ling Ding<br>**Affiliation:** China University of Mining and Technology<br>**Presenter:** Shifei Ding |
| **13:50-14:10** | **#03** | **Title:** Comparative Study of Chaos-embedded Particle Swarm Optimization<br>**All Authors:** Dongping Tian, Bingchun Li, Chen Liu, Haiyan Li, Ling Yuan<br>**Affiliation:** Kashi University<br>**Presenter:** Dongping Tian |
| **14:10-14:30** | **#13** | **Title:** A Novel Feature Selection Algorithm Based on Aquila Optimizer for COVID-19 Classification<br>**All Authors:** Ling Li, Jeng-Shyang Pan, Zhongjie Zhuang, Shu-Chuan Chu<br>**Affiliation:** Shandong University of Science and Technology<br>**Presenter:** Ling Li |
| **14:30-14:50** | **#53** | **Title:** A Game-Theoretic Analysis of Impulse Purchase<br>**All Authors:** Kaili Sun, Xudong Luo<br>**Affiliation:** Guangxi Normal University<br>**Presenter:** Kaili Sun |
| **14:50-15:10** | **#18** | **Title:** A Self-supervised Strategy for the Robustness of VQA Models<br>**All Authors:** Jingyu Su, Chuanhao Li, Chenchen Jing, Yuwei Wu<br>**Affiliation:** Beijing Institute of Technology<br>**Presenter:** Yuwei Wu |
| **15:10-15:30** | **#07** | **Title:** Employing Contrastive Strategies for Multi-label Textual Emotion Recognition<br>**All Authors:** Yangyang Zhou, Xin Kang, Fuji Ren<br>**Affiliation:** Tokushuma University<br>**Presenter:** Yangyang Zhou |

## Session II-Data Mining

Session Chair: **Zhongying Zhao**, Shandong University of Science and Technology

May 28 | China Standard Time (CST) UTC/GMT+08:00

**Zoom ID: 831 5314 0997 (Room 2)**
https://us02web.zoom.us/j/83153140997

| | | |
|---|---|---|
| 13:30-13:50 | #37 | **Title:** Interactive Mining of User-Preferred Co-Location Patterns Based on SVM<br>**All Authors:** Yuxiang Zhang, Xuguang Bao, Liang Chang, Tianlong Gu<br>**Affiliation:** Guilin University of Electronic Technology<br>**Presenter:** Yuxiang Zhang |
| 13:50-14:10 | #41 | **Title:** Classification between Rumors and Explanations of Rumors based on Common and Difference Subsequences of Sentences<br>**All Authors:** Xiaoping Sun, Junsheng Zhang, Yufei Sang<br>**Affiliation:** Institute of Computing Technology, Chinese Academy of Sciences, Beijing, China<br>**Presenter:** Xiaoping Sun |
| 14:10-14:30 | #12 | **Title:** Double-Channel Multi-layer Information Fusion for Text Matching<br>**All Authors:** Guoxi Zhang, Yongquan Dong, Huafeng Chen<br>**Affiliation:** Jiangsu Normal University<br>**Presenter:** Guoxi Zhang |
| 14:30-14:50 | #44 | **Title:** Augmenting context representation with triggers knowledge for Relation Extraction<br>**All Authors:** En Li, Shumin Shi, Zhikun Yang, Heyan Huang<br>**Affiliation:** Beijing Institute of Technology<br>**Presenter:** En Li |
| 14:50-15:10 | #35 | **Title:** Does Large Pretrained Dataset always help? On the Effect of Dataset Size on Big Transfer Model<br>**All Authors:** Xue Li, Kai Jiang, Qiang Duan, Rui Li, Yang Tian, Qibin Chen, Xiangyu Zhu, Yongfei Jia, Hui Zhang<br>**Affiliation:** Inspur Academy of Science and Technology<br>**Presenter:** Qiang Duan |
| 15:10-15:30 | #46 | **Title:** Using Multi-level Attention based on Concept Embedding Enrichen Short Text to Classification<br>**All Authors:** Ben You, Xiaohong Li, Qixuan Peng, Ruihong Li<br>**Affiliation:** Northwest Normal University<br>**Presenter:** Ben You |

## Session III-Machine Learning &Multiagent Systems

Session Chair: **Shujuan Ji**, Shandong University of Science and Technology

May 28 | China Standard Time (CST) UTC/GMT+08:00

**Zoom ID: 839 4117 7533 (Room 1)**
https://us02web.zoom.us/j/83941177533

| | | |
|---|---|---|
| **15:45-16:05** | **#05** | **Title:** Inductive Light Graph Convolution Network for Text Classification based on Word-Label Graph<br>**All Authors:** Jinze Shi, Xiaoming Wu, Xiangzhi Liu, Wenpeng Lu, Shu Li<br>**Affiliation:** Qilu University of Technology (Shandong Academy of Sciences) & Shandong Computer Science Center (National Supercomputer Center in Jinan)<br>**Presenter:** Jinze Shi |
| **16:05-16:25** | **#33** | **Title:** Sparse Subspace Clustering Based on Adaptive Parameter Training<br>**All Authors:** Kexuan Zhu, Min Li<br>**Affiliation:** Nanchang institute of technology<br>**Presenter:** Kexuan Zhu |
| **16:25-16:45** | **#36** | **Title:** A Hybrid Multi-objective Optimization Algorithm with Improved Neighborhood Rough Sets for Feature Selection<br>**All Authors:** Tao Li, Jiucheng Xu, Meng Yuan, Zhigang Gao<br>**Affiliation:** Henan Normal University<br>**Presenter:** Tao Li |
| **16:45-17:05** | **#45** | **Title:** Augmenting Convolution Neural Networks By Utilizing Attention Mechanism for Knowledge Tracing<br>**All Authors:** Meng Zhang, Liang Chang, Tieyuan Liu, Chen Wei<br>**Affiliation:** Guilin University of Electronic Technology<br>**Presenter:** Meng Zhang |
| **17:05-17:25** | **#54** | **Title:** Pre-loaded Deep-Q Learning<br>**All Authors:** Tristan Michael Falck, Elizabeth Marie Ehlers<br>**Affiliation:** University of Johannesburg<br>**Presenter:** Tristan Michael Falck |
| **17:25-17:45** | **#51** | **Title:** Resource Scheduling for Human-Machine Collaboration in Multiagent Systems<br>**All Authors:** Yifeng Zhou, Kai Di, Zichen Dong, Yichuan Jiang<br>**Affiliation:** Southeast University<br>**Presenter:** Yifeng Zhou |

## Session IV-Pattern Recognition &Image Processing

Session Chair: **Wenjuan Gong**, China University of Petroleum (East China)

May 28 | China Standard Time (CST) UTC/GMT+08:00

**Zoom ID: 831 5314 0997 (Room 2)**
https://us02web.zoom.us/j/83153140997

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| **15:45-16:05** | **#27** | **Title:** Fault diagnosis of sewage treatment equipment based on feature selection<br>**All Authors:** Mingzhu Lou<br>**Affiliation:** Nanchang Institute of Technology<br>**Presenter:** Mingzhu Lou |
| **16:05-16:25** | **#25** | **Title:** Attention Adaptive Chinese Named Entity Recognition Based on Vocabulary Enhancement<br>**All Authors:** Ping Zhao, Quansheng Dou, Ping Jiang<br>**Affiliation:** Shandong Technology and Business University<br>**Presenter:** Ping Zhao |
| **16:25-16:45** | **#09** | **Title:** A HEp-2 Cell Image Classification Model Based on Deep Residual Shrinkage Network Combined with Dilated Convolution<br>**All Authors:** Chen Wang, Tao He, Jiansheng Liu, Dapeng Li, Yingyou Wen<br>**Affiliation:** Northeastern University<br>**Presenter:** Chen Wang |
| **16:45-17:05** | **#38** | **Title:** A Method on Online Learning Video Recommendation Method Based on Knowledge Graph<br>**All Authors:** Xin Chen, Yuhong Sun, Tong Zhou, Qingtian Zeng, Huafang Qi<br>**Affiliation:** Shandong University of Science and Technology<br>**Presenter:** Xin Chen |
| **17:05-17:25** | **#20** | **Title:** Data Transformation for Super-Resolution on Ocean Remote Sensing Images<br>**All Authors:** Yuting Yang, Kin-Man Lam, Xin Sun, Junyu Dong, Muwei Jian, Hanjiang Luo<br>**Affiliation:** Ocean University of China<br>**Presenter:** Junyu Dong |
| **17:25-17:45** | **#43** | **Title:** A Novel RGBD Image Superpixel Segmentation Intergrated Depth Map Quality<br>**All Authors:** Weiyi Wei, Wenxia Chen, Hong Tao<br>**Affiliation:** NorthWest Normal University<br>**Presenter:** Weiyi Wei |

## Session V-Pattern Recognition

Session Chair: **Xue Zhang**, Shandong University of Science and Technology

May 29 | China Standard Time (CST) UTC/GMT+08:00

**Zoom ID: 839 4117 7533 (Room 1)**
https://us02web.zoom.us/j/83941177533

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| **13:30-13:50** | **#11** | **Title:** Fault Localization Based on Deep Neural Network and Execution Slicing<br>**All Authors:** Weidong Zhao, Xinling Li, Ming Wang<br>**Affiliation:** Shandong University of Science and Technology<br>**Presenter:** Xinling Li |
| **13:50-14:10** | **#14** | **Title:** Defect Detection and Classification of Strip Steel based on Improved VIT Model<br>**All Authors:** Lina Xing, Tinghui Li, Honghui Fan, Hongjin Zhu<br>**Affiliation:** Jiangsu University of Technology<br>**Presenter:** Lina Xing |
| **14:10-14:30** | **#08** | **Title:** ROSES: A novel semi-supervised feature selector<br>**All Authors:** Xiaoyu Zhang, Keyu Liu, Jing Ba, Xin Yang, Xibei Yang<br>**Affiliation:** Jiangsu University of Science and Technology<br>**Presenter:** Xiaoyu Zhang |
| **14:30-14:50** | **#01** | **Title:** Improving speech emotion recognition by fusing pre-trained and acoustic features using Transformer and BiLSTM<br>**All Authors:** Zheng Liu, Xin Kang, Fuji Ren<br>**Affiliation:** Tokushima University, Japan<br>**Presenter:** Zheng Liu |
| **14:50-15:10** | **#39** | **Title:** A Pear Leaf Diseases Image Recognition Model Based on Capsule Network<br>**All Authors:** Zhida Jia, Wenqian Mu, Junhua Gong, Yi Zong, Yongjie Liu<br>**Affiliation:** Shandong Agricultural University<br>**Presenter:** Zhida Jia |
| **15:10-15:30** | **#10** | **Title:** Software Defect Prediction Method Based on Cost-Sensitive Random Forest<br>**All Authors:** Weidong Zhao, Shengdong Zhang, Ming Wang<br>**Affiliation:** Shandong University of Science and Technology<br>**Presenter:** Shengdong Zhang |

## Session VI-Social Computing &Blockchain Technology

Session Chair: **Yanwei Yu**, Ocean University of China

May 29 | China Standard Time (CST) UTC/GMT+08:00

**Zoom ID: 831 5314 0997 (Room 2)**
https://us02web.zoom.us/j/83153140997

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| **13:30-13:50** | **#48** | **Title:** Automatic generation and analysis of role relation network from emergency plans<br>**All Authors:** Hongkun Zhao, Qingtian Zeng, Wenyan Guo, Weijian Ni<br>**Affiliation:** Shan dong University of Science and Technology<br>**Presenter:** Hongkun Zhao |
| **13:50-14:10** | **#26** | **Title:** Information Tracking Extraction for Emergency Scenario Response<br>**All Authors:** Hua Zhao, Xiaoqian Li, Peixin Zhang, Zhengguo Song<br>**Affiliation:** Shandong University of Science and Technology<br>**Presenter:** Hua Zhao |
| **14:10-14:30** | **#24** | **Title:** Neighborhood Network for Aspect-based Sentiment Analysis<br>**All Authors:** Huan Liu, Quansheng Dou<br>**Affiliation:** Shandong Technology and Business University<br>**Presenter:** Huan Liu |
| **14:30-14:50** | **#31** | **Title:** A Hybrid Parallel Algorithm with Multiple Improved Strategies<br>**All Authors:** Tingting Wang, Jeng-Shyang Pan, Pei-Cheng Song, Shu-Chuan Chu<br>**Affiliation:** Shandong University of Science and Technology<br>**Presenter:** Tingting Wang |
| **14:50-15:10** | **#47** | **Title:** Research on blockchain privacy protection mechanism in financial transaction services based on zero-knowledge proof and federal learning<br>**All Authors:** Maoguang Wang, Tianming Wang, Haoyue Ji<br>**Affiliation:** Central University of Finance and Economics<br>**Presenter:** Tianming Wang |
| **15:10-15:30** | **#42** | **Title:** A Distributed Supply Chain Architecture Based on Blockchain Technology<br>**All Authors:** Peng Zhao, Shiren Ye<br>**Affiliation:** Changzhou University<br>**Presenter:** Peng Zhao |

## Session VII-Applications

Session Chair: **Liang Qi**, Shandong University of Science and Technology

May 29 | China Standard Time (CST) UTC/GMT+08:00

**Zoom ID: 839 4117 7533 (Room 1)**
https://us02web.zoom.us/j/83941177533

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| 15:45-16:05 | #34 | **Title:** A Method for AGV Double-cycling Scheduling at Automated Container Terminals<br>**All Authors:** Hongchang Zhang, Liang Qi, Huijuan Ma<br>**Affiliation:** Shandong University of Science and Technology<br>**Presenter:** Liang Qi |
| 16:05-16:25 | #50 | **Title:** Predicting Student Performance In Online Learning Using A Highly Efficient Gradient Boosting Decision Tree<br>**All Authors:** Chang Wang, Liang Chang, Tieyuan Liu<br>**Affiliation:** Guilin University of Electronic Technology<br>**Presenter:** Chang Wang |
| 16:25-16:45 | #21 | **Title:** Adapting on Road Traffic-oriented Controlled Optimization of Phases to Heterogeneous Intersections<br>**All Authors:** Ziyan Qiao, Rui Sun, Shiyao Chen, Dong Zi, Xingyu Wu, Qian Wang, Endong Tong, Wenjia Niu, Jiqiang Liu<br>**Affiliation:** Beijing Jiaotong University<br>**Presenter:** Ziyan Qiao |
| 16:45-17:05 | #56 | **Title:** A Method of Garbage Quantity Prediction based on Population Change<br>**All Authors:** Qiumei Yu, Hongjie Wan, Junchen Ma, Huakang Li, Guozi Sun<br>**Affiliation:** Nanjing University of Posts and Telecommunications<br>**Presenter:** Guozi Sun |

## Session VIII-Image Processing

Session Chair: **Xiaowei Zhang**, Qingdao University

May 29 | China Standard Time (CST) UTC/GMT+08:00

**Zoom ID: 831 5314 0997 (Room 2)**
https://us02web.zoom.us/j/83153140997

**15:45-16:05** **#49**

**Title:** Super-Resolution of Defocus Thread Image Based on Cycle Generative Adversarial Networks
**All Authors:** Pengfei Jiang, Wanqing Xu, Jinping Li
**Affiliation:** Universty of Jinan
**Presenter:** Pengfei Jiang

**16:05-16:25** **#04**

**Title:** Multi-instance Learning for Semantic Image Analysis
**All Authors:** Dongping Tian, Ying Zhang
**Affiliation:** Kashi University & Baoji University of Arts and Sciences
**Presenter:** Dongping Tian

**16:25-16:45** **#52**

**Title:** High-resolution Remote Sensing Image Semantic Segmentation Method Based on Improved Encoder-Decoder Convolutional Neural Network
**All Authors:** Xinyu Zhang, Ying Zhang, Jianfei Chen, Huijun Du
**Affiliation:** Power Supply Ltd of Tai an
**Presenter:** Xinyu Zhang

# - Final Session -

MAY 29, 2022

China Standard Time (CST) UTC/GMT+08:00

## Closing Ceremony

Chair | Yongquan Liang, Shandong University of Science and Technology

**- 17:05-17:30 -**

### IIP 2022 Summarization

Zhongzhi Shi, Chinese Academy of Sciences

### Message of IIP 2024 Organizer

Xin Yao, Southern University of Science and Technology