Advanced Program

IIP 2024

13th IFIP TC 12 International Conference on

Intelligent Information Processing XII

May 3-6, 2024

Shenzhen, China

Advanced Program

*13th **IFIP** International Conference on*

Intelligent Information

Processing

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Sponsored by

    International Federation for Information Processing, IFIP TC12

    Chinese Association for Artificial Intelligence (CAAI)

Co-Sponsored by

    Research Institute of Trustworthy Autonomous Systems, Southern University of Science and Technology (SUSTech)

    Department of Computer Science and Engineering, SUSTech

    Mind Computation Technical Committee, CAAI

    Harbin Institute of Technology, Shenzhen

Welcome Address

Dear Colleagues,

Welcome to the 13th IFIP International Conference on Intelligent Information Processing (IIP2024)! 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 re-search progresses in all aspects of intelligent information processing.

We received 58 papers, of which 44 papers are included in this program as regular papers and 5 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, Southern University of Science and Technology, and the Institute of Computing Technology of the Chinese Academy of Sciences. We specially thank Xin Yao, Wenjian Luo, Jialin Liu and Peng Yang for organizing the conference and Muyao Zhong, Heping Fang, Chenkai Wang and Zhenhua Yang for carefully checking the proceedings.

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

Zhongzhi Shi
Jim Tørresen
Shengxiang Yang

May 2024

Conference Organization

General Chair

E. Mercier-Laurent, France   Xiaohua Tony Hu, USA   Yi Zeng, China

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Shengxiang Yang, UK, China
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Keynotes Speakers

The Impact of Generative AI (ChatGPT) on AI Research and Societal Development

Chengqi Zhang

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Abstract: Generative AI, such as ChatGPT, represents a significant leap forward in the field of artificial intelligence, enabling the automatic generation of text, images, and more. It has not only reshaped our understanding of cognitive research in AI, but has also uniquely addressed critical issues in the field of cognitive science through its 'violent aesthetics.' Generative AI possesses a high level of intelligence in generating text and has broad application potential across various domains. From automated content creation to online customer support, translation services, and creative content generation, it enhances efficiency, saves time, and conserves resources, providing robust support for societal development. However, Generative AI is not without limitations. Concerns exist regarding the correctness, authenticity, and reliability of the generated content. Therefore, careful consideration is essential when applying it. We must assess the sensitivity of a particular domain to erroneous results to determine whether the use of Generative AI is safe. In the future, Generative AI will continue to evolve, with more powerful models, expanded application domains, and improved management. It will persistently drive advancements in artificial intelligence technology, positively impacting society. However, prudent management is crucial to harness its potential to the fullest while mitigating potential risks.

Bio-Sketch: Professor Chengqi Zhang obtained his Bachelor's degree from Fudan University in March 1982 in Computer Science, Master's degree by research from Jilin University in March 1985 in Artificial Intelligence, PhD degree from The University of Queensland in October 1991 in Artificial Intelligence, followed by a Doctor of Science (DSc – Higher Doctorate) from Deakin University in October 2002 in Artificial Intelligence. Chengqi Zhang has been appointed as a Pro Vice-Chancellor (China Enterprise) on 1 December 2021 at the University of Technology Sydney (UTS), a Distinguished Professor on 27 February 2017 at UTS.

Prof. Zhang's research interests mainly focus on Distributed Artificial Intelligence and Data Mining. A prolific contributor to his field, Professor Zhang has published over 350 scholarly articles, including a number of papers in first-class international journals, such as Artificial Intelligence, IEEE, and ACM Transactions. As per Google Scholar, his body of work has attracted more than 27,000 citations, an H-index of 69 (on 2/10/2023). He has been a sought-after keynote speaker at 28 international conferences. He has supervised over 30 doctoral graduates, a notable 10 of whom have ascended to full professorships. His dedication earned him the NSW Science and Engineering Award (2011) and the Vice-Chancellor's Award for Outstanding Research in Leadership at UTS (2011). He was also awarded the 2021 IEEE ICDM Outstanding Service Award.

Prof. Zhang is a Fellow of the Australian Computer Society (ACS) and a Senior Member of the IEEE Computer Society (IEEE). Additionally, he served in the ARC College of Experts from 2012 to 2014. He had been elected as the founding Chair of the Steering Committee of the International Conference on Knowledge Science, Engineering, and Management between 2006 and 2014. He has been serving as an Associate Editor for three international journals, including IEEE Transactions on Knowledge and Data Engineering from 2005 to 2008; and he served as General Chair, PC Chair, or Organising Chair for five international Conferences including KDD 2015, ICDM 2010 and WI/IAT 2008. He is also the Local Arrangements Chair of IJCAI-2017 in Melbourne (International Joint Conference on Artificial Intelligence), and was appointed as IJCAI Sponsorship Officer, and General Chair of IJCAI-2024.

Towards Collaborative Edge AI

Jiannong Cao

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Abstract: Existing edge computing research focuses on the vertical collaboration among cloud, edge, and end devices, while neglecting horizontal edge-to-edge collaborations, suffering from unoptimized resource utilization, restricted service coverage, and uneven performance. In this talk, I introduce our recent project on Collaborative Edge Computing Framework (CECF) enabling advanced AIoT applications which demand ultra-low latency, large-scale deployment, and dynamic access. Aiming at establishing a new-generation edge computing infrastructure, CECF provides new abstractions and functionalities for large-scale geo-distributed edge nodes to share compute, data, and network resources and collaboratively perform application tasks. It facilitates the evolution of the current edge computing to future collaborative edge intelligence There are many challenging issues, including heterogeneous edge networking, cross-node virtualization, scalable resource management, collaborative task scheduling, distributed machine learning, and seamless deployment of AIoT applications. I will highlight the proposed architecture, methods, and techniques to address the challenging issues and point out the future directions.

Bio-Sketch: Professor Jiannong Cao is the Otto Poon Charitable Foundation Professor in Data Science and the Chair Professor of Distributed and Mobile Computing in the Department of Computing at The Hong Kong Polytechnic University. He is the Dean of Graduate School, director of Research Institute for AIoT, director of Internet and Mobile Computing Lab and the associate director of University's Research Facility in Big Data Analytics. He served the department head from 2011 to 2017.

Prof. Cao's research interests include parallel and distributed computing, wireless networking and mobile computing, big data and machine learning, and cloud and edge computing. He published 5 co-authored and 9 co-edited books, and over 500 papers in major international journals and conference proceedings. He also obtained 13 patents. Dr. Cao received many awards for his outstanding research achievements. He is a member of Academia Europaea, a fellow of Hong Kong Academy of Engineering Sciences, a fellow of IEEE, a fellow of CCF and a distinguished member of ACM. In 2017, he received the Overseas Outstanding Contribution Award from China Computer Federation.

ChatGLM: An Alternative to ChatGPT

Jie Tang

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Abstract: Large language models have substantially advanced the state of the art in various AI tasks, such as natural language understanding and text generation, and image processing, multimodal modeling. In this talk, I am going to talk about how we build GLM-130B, a bilingual (English and Chinese) pre-trained language model with 130 billion parameters. It is an attempt to open-source a 100B-scale model at least as good as GPT-3 and unveil how models of such a scale can be successfully pre-trained. Based on GLM-130B, we have developed ChatGLM, an alternative to ChatGPT. A small version, ChatGLM-6B, is opened with weights and codes. It can be deployed with one RTX 2080 Ti (11G) GPU, which makes it possible for everyone to deploy a ChatGPT! It has attracted over 2,000,000 downloads on Hugging Face in one month, and won the trending #1 model for two weeks.

Bio-Sketch: Professor Jie Tang is a WeBank Chair Professor of Computer Science at Tsinghua University. He is a Fellow of the ACM, a Fellow of AAAI, and a Fellow of IEEE. His interest is artificial general intelligence (AGI). His research received the SIGKDD Test-of-Time Award (10-year Best Paper). He also received the SIGKDD Service Award. Recently, he puts all efforts into Large Language Models (LLMs).

Invited Speakers

Searching for Multiple Low-dimensional Needles in a Higher-dimensional Haystack

Peter Tino

Department of Complex and Adaptive Systems
University of Birmingham, UK
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Abstract: The data can be distributed around an unknown number of low-dimensional noisy manifolds of diverse and unknown dimensionalities, immersed in a (possibly intense) background noise. It is up to us to detect all the distinct manifolds, construct smooth models of their skeletons and provide the corresponding explicit probabilistic noisy manifold models. To that end, we will generalize Generative Topographic Mapping to abstract latent spaces, so that arbitrary low-dimensional manifolds can be modeled (including non-orientable ones, e.g., Moebius strip). We will show how such latent spaces can be constructed through a dedicated manifold crawling procedure and then smoothly embedded in the data space. Finally, the noisy manifolds are captured by endowing the embedded latent spaces with suitable probabilistic models. We will illustrate the methodology in the context of detection of low-dimensional manifold structures emerging in astrophysics. In particular, we will show how a dwarf galaxy disruption process in a galaxy cluster can be analyzed in a new way through probabilistic modelling of streams, bubbles and shells forming part of the "jellyfish" galactic structure. We will also demonstrate how this methodology can be used to study formation of large-scale dark matter filaments and dynamics around them in cosmological simulations.

Bio-Sketch: Peter Tiňo holds a Chair position in Complex and Adaptive Systems at the University of Birmingham, UK. His interests span complex systems, machine learning, neural computation, probabilistic modelling and dynamical systems. Peter is fascinated by the possibilities of cross-disciplinary blending of machine learning, mathematical modelling and domain knowledge in a variety of scientific disciplines ranging from astrophysics to bio-medical sciences.

Prof. Tiňo has served on editorial boards of a variety of journals including IEEE

Transactions on Neural Networks and Learning Systems, IEEE Transactions on Cybernetics, Scientific Reports, and Neural Computation and (co-)chaired Task Force on Mining Complex Astronomical Data and Neural Networks Technical Committee (TC of IEEE Computational Intelligence Society). Peter led an EPSRC-funded consortium of six UK universities on developing new mathematics for personalised healthcare. He was a recipient of the Fulbright Fellowship to work at NEC Research Institute, Princeton, USA, on dynamics of recurrent neural networks, UK–Hong-Kong Fellowship for Excellence, three Outstanding Paper of the Year Awards from the IEEE Transactions on Neural Networks and the IEEE Transactions on Evolutionary Computation, and the Best Paper Award at ICANN 2002.

Learning to Optimize

Ke Tang

Research Institute of Trustworthy Autonomous Systems (RITAS)
and
Department of Computer Science and Engineering
Southern University of Science and Technology (SUSTech),
Shenzhen, China
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Abstract: Real-world optimization problems are becoming increasingly complex such that off-the-shelf algorithms could hardly offer satisfactory performance. On the other hand, the prior knowledge and efforts needed for manually designing a new dedicated algorithm may, in many cases, unaffordable. A data-driven paradigm, termed Learn to Optimize (L2O), provide a potentially powerful way for automated algorithm/solver design. This talk provides an overview on L2O, including the motivating background, key research questions, recent progress, as well as successful case studies.

Bio-Sketch: Ke Tang is a Professor at the Department of Computer Science and Engineering, Southern University of Science and Technology (SUSTech). His major research interests include evolutionary computation and machine learning, as well as their applications. He is a Fellow of IEEE and Changjiang Scholar Professor for Artificial Intelligence. He is also the recipient of a few national and international awards, such as the IEEE Computational Intelligence Society Outstanding Early Career Award, the Natural Science Award of Ministry of Education of China, and the Newton Advanced Fellowship of the Royal Society, UK.

Sensing and Understanding Humans by a Robot

Jim Tørresen

Robotics and Intelligent Systems Group
University of Oslo, Norway
jimtoer@ifi.uio.no

Abstract: The recent progress in computational intelligence demonstrates how to effectively sense and understand human behavior. At the University of Oslo, we work – supported by the Research Council of Norway – with research on various types of sensors relevant to analyzing human non-verbal expressions and their activities. This is relevant for robots looking after and assisting older people living at home. Introducing this ongoing work is the topic of this talk. We address the challenge of the expected shortage of healthcare resources in the future as the proportion of elderly people worldwide increases. To handle this challenge, it becomes important that people live as long as possible in their own homes which is also what most older people want themselves. Thus, a rising issue is how to incorporate technology to find efficient solutions for health monitoring and care for older people staying at home. Our projects address computational intelligence research for robots on sensing, reasoning and control, and through interdisciplinary collaboration, as well as legal and ethical issues. We think that design with user participation is important, and thus, we have increased our attention on human–robot interaction studies. This talk will introduce some examples from our work and how we address it from a technical, legal and ethical side.

Bio-Sketch: Jim Tørresen is a professor at the University of Oslo, where he leads the Robotics and Intelligent Systems research group. He is also a PI at the interdisciplinary Centre of Excellence for Interdisciplinary Studies in Rhythm, Time and Motion (RITMO). He received his M.Sc. and Dr.ing. (Ph.D) degrees in computer architecture and design from the Norwegian University of Science and Technology, University of Trondheim in 1991 and 1996, respectively. He has been employed as a senior hardware designer at NERA Telecommunications (1996-1998) and at Navia Aviation (1998-1999). Since 1999, he has been a professor at the Department of Informatics at the University of Oslo (associate professor 1999-2005). Jim Tørresen has been a visiting researcher at Kyoto University, Japan for one year (1993-1994), four months at Electrotechnical Laboratory, Tsukuba, Japan (1997 and 2000) and a visiting professor at Cornell University, USA for one year

(2010-2011).

Prof. Tørresen's research interests at the moment include artificial intelligence, ethical aspects of AI and robotics, machine learning, robotics, and applying this to complex real-world applications. Several novel methods have been proposed. He has published approximately 250 scientific papers in international journals, books and conference proceedings. A number of tutorials and invited talks have been given at international conferences and research institutes. He is in the program committee of more than ten different international conferences, associate editor of three international scientific journals as well as a regular reviewer of a number of other international journals. He has also acted as an evaluator for proposals in EU FP7 and Horizon2020 and is currently project manager/principal investigator in four externally funded research projects/centres. He is a member of the Norwegian Academy of Technological Sciences (NTVA) and the National Committee for Research Ethics in Science and Technology (NENT), where he is a member of a working group on research ethics for AI. More information and a list of publications can be found here: https://www.mn.uio.no/ifi/english/people/aca/jimtoer.

Overview of Technical Program

Time	May 3th Friday	May 4th Saturday			May 5th Sunday	
8:00-9:00	-	Registration			-	
9:00-9:10	-	**IIP 2024 Opening Ceremony** Place: Conference room 1			-	
9:10-9:55	-	**Keynote Talk I** Place: Conference room 1			**Invited Talk I** Place: Conference room 1	
9:55-10:25	-	**Coffee Break & Group Photo** Place: Outside the function room			**Coffee Break** Place: Outside the function room	
10:25-11:10	-	**Keynote Talk II** Place: Conference room 1			**Invited Talk II** Place: Conference room 1	
11:10-11:55	-	**Keynote Talk III** Place: Conference room 1			**Invited Talk III** Place: Conference room 1	
11:55-13:30	-	**Lunch** Place: Xingpu Dining room (星璞餐厅)			**Lunch** Place: Xingpu Dining room (星璞餐厅)	
14:00-15:40	**Registration** Place: Hotel Lobby	**Session A1** Machine Learning 1 Place: Conference room 1	**Session B1** Neural and evolutionary computing 1 Place: Function room 1	**Session C1** Natural Language Processing Place: Function room 2	**Session A3** Pattern Recognition 1 Place: Conference room 1	**Session B3** Image understanding Place: Function room 2
15:40-16:00		Coffee Break Place: Outside the function room			Coffee Break Place: Outside the function room	
16:00-17:40		**Session A2** Machine Learning 2 Place: Conference room 1	**Session B2** Neural and evolutionary computing 2 Place: Function room 1	**Session C2** Business intelligence and risk control Place: Function room 2	**Session A4** Pattern Recognition 2 Place: Conference room 1	**Session B4** Recommendation and social computing Place: Function room 2
18:00-20:30	**Reception** Place: Function room (多功能厅)	**Banquet** Place: Banquet Hall(君璞宴会厅)			**Dinner** Place: Xingpu Dining room (星璞餐厅)	

Technical Program

Friday May 3rd, 2024
Whole Day: Registration
Place: Hotel lobby

6:00pm – 8:00pm: **Reception**
Place: Function room

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Saturday May 4th, 2024

8:00am-9:00am: **Registration**

9:00am-9:10am: IIP2024 Opening Ceremony
Place: Conference room 1
Chair: Jim Tørresen, PC Co-Chair

Jim Tørresen: Introduction to IIP2024 Program
Xin Yao: Greeting from Local Chairs

9:10am-9:55am: Keynote Talk 1
Room: Conference room 1
Chair: Xin Yao
Chengqi Zhang: The Impact of Generative AI (ChatGPT) on AI Research and Societal Development

9:55am-10:25am: Coffee Break & Group Photo

10:25am-11:10am: Keynote Talk 2
Room: Conference room 1
Chair: Jim Tørresen
Jiannong Cao: Towards Collaborative Edge AI

11:10am-11:55am: Keynote Talk 3
Room: Conference room 1
Chair: Chengqi Zhang
Jie Tang: ChatGLM: An Alternative to ChatGPT

11:55am-1:30pm: Lunch Break
Place: Xingpu Dining room (星璞餐厅)

2:00pm-3:40pm: Parallel Sessions

Session A1: Machine Learning 1
Room: Conference room 1
Chair: Changwu Huang

1. Dual Contrastive Learning for Anomaly Detection in Attributed Networks
   Shijie Xue, He Kong and Qi Wang
2. Towards A Flexible Accuracy-Oriented Deep Learning Module Inference Latency Prediction Framework for Adaptive Optimization Algorithms
   Jingran Shen, Nikos Tziritas and Georgios Theodoropoulos
3. Table Orientation Classification Model Based on BERT and TCSMN
   Dawei Jin, Rongxin Mi and Tianhang Song
4. Divide-and-Conquer Strategy for Large-Scale Dynamic Bayesian Network Structure Learning
   Hui Ouyang, Cheng Chen and Ke Tang
5. Entropy-Based Logic Explanations of Differentiable Decision Tree
   Yuanyuan Liu, Jiajia Zhang and Yifan Li

Session B1: Neural and Evolutionary Computing 1
Room: Function room 1
Chair: Peng Yang

1. Empirical Evaluation of Evolutionary Algorithms with Power-Law Ranking Selection
   Duc-Cuong Dang, Anton V.Eremeev and Xiaoyu Qin
2. An Indicator Based Evolutionary Algorithm for Multiparty Multiobjective Knapsack Problems
   Zhen Song, Wenjian Luo, Peilan Xu, Zipeng Ye and Kesheng Chen
3. Ensemble Strategy Based Hyper-Heuristic Evolutionary Algorithm for Many-objective Optimization
   Wang Qian, Zhang Jingbo and Cui Zhihua
4. Rolling Horizon Co-evolution for Snake AI Competition
   Hui Li, Jiayi Zhou and Qingquan Zhang
5. Training Artificial Immune Networks as Standalone Generative Models for Realistic Data Synthesis
   Siphesihle Sithungu and Elizabeth Ehlers

Session C1: Natural Language Processing
Room: Function room 2
Chair: Bo Yuan

1. Are Mixture-of-Modality-Experts Transformers Robust to Missing Modality During Training And Inferring?
Yan Gao, Tong Xu and Enhong Chen
2. Question Answering Systems Based on Pre-trained Language Models: Recent Progress
Xudong Luo, Ying Luo and Binxia Yang
3. A BERT-Based Model for Legal Document Proofreading
Jinlong Liu and Xudong Luo
4. Entity Relation Joint Extraction with Data Augmentation Based on Large Language Model
Manman Zhang，Shuocan Zhu, Jingmin Zhang, Yu Han, Xiaoxuan Zhu and Leilei Zhang
5. FedPV-FS: A Feature Selection Method for Federated Learning in Insurance Precision Marketing
Chunkai Wang and Jian Feng

3:40pm-4:00pm: Coffee Break

4:00pm-5:40pm: Parallel Sessions

Session A2: Machine Learning 2
Room: Conference room 1
Chair: Changwu Huang

1. Deep Friendly Embedding Space for Clustering
Haiwei Hou, Shifei Ding, Xiao Xu and Lili Guo
2. Bayesian Personalized Sorting based on Time Factors and Hot Recommendations
Wenhua Zeng, Junjie Liu and Bo Zhang
3. Design and Implementation of Risk Control Model Based on Deep Ensemble Learning Algorithm
Maoguang Wang and Ying Cui
4. More Teachers Make Greater Students: Compression of CycleGAN
Xiaoxi Liu, Lin Lv, Ju Liu, Yanyang Han, Mengnan Liang and Xiao Jiang
5. Hybrid integrated dimensionality reduction method based on conformal homeomorphism mapping
Bianping Su, Chaoyin Liang, Chunkai Wang, Yufan Guo, Shicong Wu, Yan Chen, Longqing Zhang and Jiao Peng

Session B2: Neural and Evolutionary Computing 2
Room: Function room 1
Chair: Peng Yang

1. Structure Optimization for Wide-Channel Plate Heat Exchanger Based on Interval Constraints
   Yinan Guo, Guoyu Chen, Dongzhang Jiang, Tong Ding and Wenbo Li
2. Genetic algorithm driven by translational mutation operator for the scheduling optimization in the steelmaking-continuous casting production
   Lin Guan, Yalin Wang, Xujie Tan and Chenliang Liu
3. Adaptive Genetic Algorithm with Optimized
   Yu.V. Zakharova and M.Yu. Sakhno
4. A Data-driven Framework for Whole-brain Network Modeling with Simultaneous EEG-SEEG Data
   Kexin Lou, Jingzhe Li, Markus Barth and Quanying Liu
5. Dynamic Parameter Estimation for Mixtures of Plackett-Luce Models
   Aling Liao, Zan Zhang, Chenyang Bu and Lei Li

Session C2: Business Intelligence and Risk Control
Room: Function room 2
Chair: Bo Yuan

1. A Stock Price Trend Prediction Method Based on Market Sentiment Factors and Multi-Layer Stacking Ensemble Learning with Dual-CNN-LSTM Models and Nested Heterogeneous Learners
   Maoguang Wang, Jiaqi Yan and Yuxiao Chen
2. Credit Default of P2P Online Loans Based on Logistic
   Xiaotong Liu, Haoyu Wang, Kaijie Zhang, Kaile Lin, Qiufeng Shi and Fanhui Zeng
3. FRBBM-Scheme: A Flexible Ratio Virtual Primary Key Generation Approach Based on Binary Matching
   Tiancai Liang, Yun Zhao, Haolin Wang, Ziwen Cai, Zhaoguo Wang, Wenchao Wang and Chuanyi Liu
4. From Concept to Prototype: Developing and Testing GAAINet for Industrial IoT Intrusion Detection
   Siphesihle Sithungu and Elizabeth Ehlers
5. Efficient and Secure Authentication Scheme for Internet of Vehicles
   Zhou Zhou, Xuan Liu, Chenyu Wang and Ruichao Lu

6:00pm-8:30pm: Banquet
Place: Banquet Hall (君璞宴会厅)

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Sunday May 5th

9:10am-9:55am: Invited Talk I
Room: Conference room 1
Chair: Ke Tang
Peter Tino: Searching for Multiple Low-dimensional Needles in a Higher-dimensional Haystack

9:55am--10:25am: Coffee Break

10:25am-11:10am: Invited Talk II
Room: Conference room 1
Chair: Wenjian Luo
Ke Tang: Learning to Optimize

11:10am-11:55am: Invited Talk III
Room: Conference room 1
Chair: Peter Tino
Jim Tørresen: Sensing and Understanding Humans by a Robot

11:55am-1:30pm: Lunch Break

Place: Xingpu Dining room (星璞餐厅)

2:00pm-3:40pm: Parallel Sessions

Session A3: Pattern Recognition 1
Room: Conference room 1
Chair: Jialin Liu
1. Research on Wavelet Packet Sample Entropy Features of sEMG Signal in Lower Limb Movement Recognition
   Jianxia Pan, Liu Yang, Xinping Fu, Haicheng Wei and Jing Zhao
2. Early Anomaly Detection in Hydraulic Pumps Based on LSTM Traffic Prediction Model
   Jiaxing Ma, Yong Wang, Jun Wen, Bo Zhang and Wei Li
3. Recognition of Signal Modulation Pattern Based on Multi-Task Self-Supervised Learning
   Dianjing Cheng, Xingyu Wu, Zhenghao Xie, Zhihua Cui, Qiong Li, Endong Tong, Wenjia Niu, Ziyi Wei and Xinyi Zhao
4. Dependency-Type Weighted Graph Convolutional Network on End-to-End Aspect-Based Sentiment Analysis
   Yusong Mu and Shumin Shi

5. Utilizing Attention for Continuous Human Action Recognition Based on Multimodal Fusion of Visual and Inertial
Liang Hua, Yong Huang, Chao Liu and Tao Zhu

Session B3: Image Understanding
Room: Function room 2
Chair: Bo Yuan
1. A Concept-Based Local Interpretable Model-agnostic Explanation Approach for Deep Neural Networks in Image Classification
Lidan Tan, Changwu Huang and Xin Yao
2. A Deep Neural Network-based Segmentation Method for Multimodal Brain Tumor Images
Zuqiang Meng and Yue Peng
3. Graph Convolutional Networks for Predicting Mechanical Characteristics of 3D Lattice Structures
Valentine Oleka, Seyyed Mohsen Zahedi, Aboozar Taherkhani, Reza Baserinia, Abolfazl Zahedi and Shengxiang Yang
4. 3D Object Reconstruction with Deep Learning
Stephen S. Aremu, Aboozar Taherkhani, and Shengxiang Yang
5. Hand Gesture Recognition Using a Multi-modal Deep Neural Network
Saneet Fulsunder, Saidu Umar, Aboozar Taherkhani, Chang Liu and Shengxiang Yang

3:40pm-4:00pm: Coffee Break

4:00pm-5:40pm: Parallel Sessions

Session A4: Pattern Recognition 2
Room: Conference room 1
Chair: Jialin Liu
1. HARFMR: Human Activity Recognition with Feature Masking and Reconstruction
Wenxuan Cui, Yingjie Chen, Yong Huang, Chao Liu and Tao Zhu
2. CAPPIMU: A Composite Activities Dataset for Human Activity Recognition Utilizing Plantar Pressure and IMU Sensors
Bin Luo, Qi Qiu, Tao Zhu and Zhenyu Liu
3. Open-Set Sensor Human Activity Recognition Based on Reciprocal Time Series
Yingiie Chen, Wenxuan Cui, Yong Huang, Chao Liu and Tao Zhu
4. Online Learning in Varying Feature Spaces with Informative Variation
Peijia Qin and Liyan Song
5. Adaptive Prototype Triplet Loss for Cross-Resolution Face Recognition
Yongru Chen, Wenxian Zheng, Xiaying Bai, Qiqi Bao, Wenming Yang, Guijin Wang and Qingmin Liao

SessionB4: Recommendation and Social Computing
Room: Function room 2
Chair: Peng Yang
1. Secure and Negotiate Scheme for Vehicle-to-Vehicle Communications in an IoV
   Jinquan Hou, Yuqiu Jian, Guosheng Xu, Qiang Cao and Guoai Xu
2. Flexible K-anonymity Scheme Suitable for Different Scenarios in Social Networks
   Mingmeng Zhang, Yuanjing Hao, Pengao Lu, Liang Chang and Long Li
3. A Recommendation Algorithm Based on Automatic Meta-Path Generation and Relationship Aggregation
   Yuying Wang, Jing Zhou, Yifan Ji, Qian Liu and Jiaying Wei
4. Cooperative Coevolution for Cross-City Itinerary Planning
   Ziyu Zhang, Peilan Xu, Zhaoguo Wang and Wenjian Luo

6:00pm-8:30pm: Dinner
Place: Xingpu Dining room (星璞餐厅)

Conference Venue

Hotel Name: **Shenzhen Nanshan Genpla Hotel (深圳塘朗城君璞酒店)**

Location: 6-16F, Block C of Tanglang Town, No.3333 Liuxian Blvd, Shenzhen, Guangdong, China. (深圳市南山区留仙大道 3333 号塘朗城西区 C 座 6-16 楼)

一、 深圳地铁 5 号线 – 深圳塘朗城君璞酒店
Shenzhen Metro Line 5 - Shenzhen Nanshan Genpla Hotel

乘坐地铁 5 号线，到达塘朗站，选择地铁 A 出口（B 出口亦可前往），穿过连廊抵达塘朗城广场购物中心 M 层，面向 MINISO 名创优品右转，直行至乐购超市侧面乘坐酒店专用电梯至 6 层，到达酒店会议厅；电梯至 7 层，到达酒店客房前台 (Take Subway Line 5 to Tanglang Station, take Subway Exit A (Exit B is also available), cross the corridor to the M Floor of Tanglang City Plaza Shopping Center, turn right towards MINISO, go straight to the side of Tesco supermarket, take the hotel elevator to the 6th floor, to the hotel conference hall; Lift to 7th floor, arrive at hotel reception)。

请按图片顺序前往酒店（地铁 A 出口路线图）

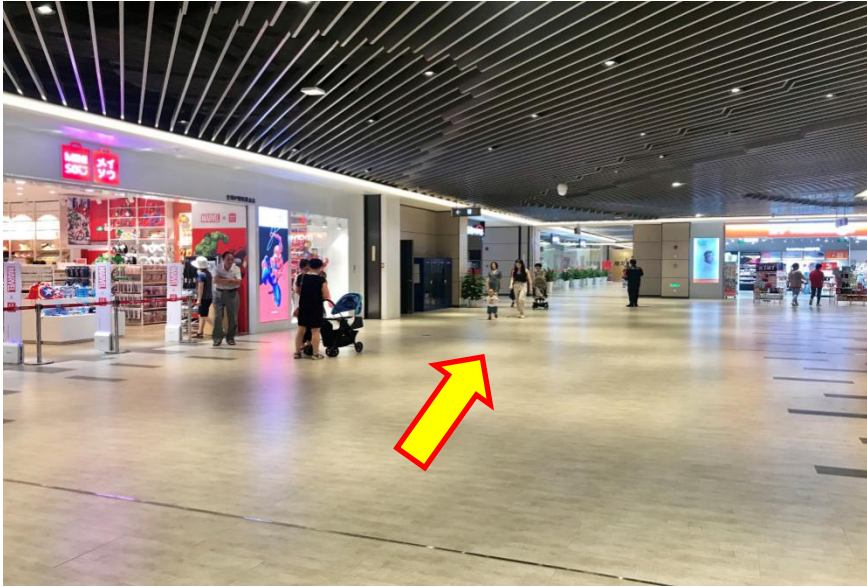Please go to the hotel in the order of the pictures (Subway Exit A)
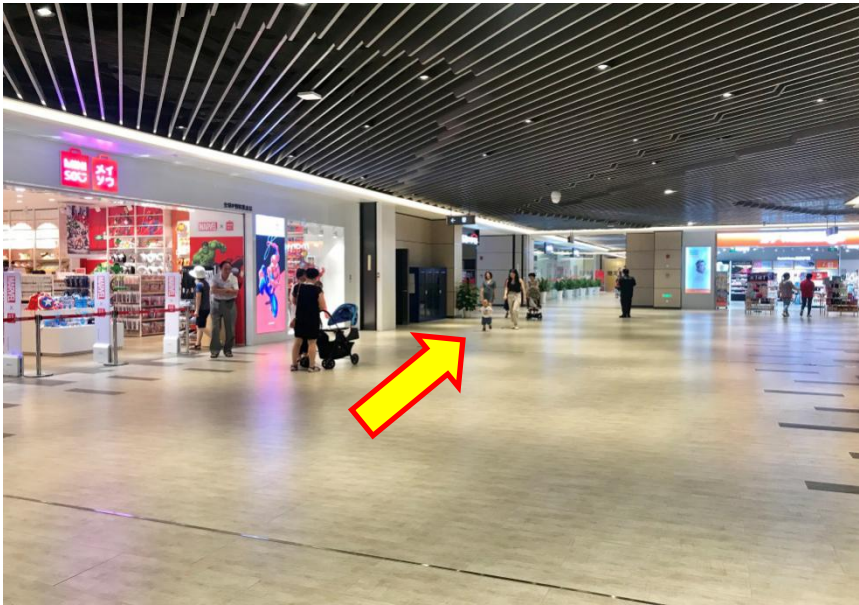
请按图片顺序前往酒店（地铁 B 出口路线图）
Please go to the hotel in the order of the pictures (Subway Exit B)

二、 自驾或乘车 – 深圳塘朗城君璞酒店

（一）乘坐出租车（Take Taxi）

导航输入(navigation input)：深圳塘朗城君璞酒店（Shenzhen Nanshan Genpla Hotel）

从留仙大道南侧塘朗城右转进入塘开路，直行 100 米右转即抵达深圳塘朗城君璞酒店入口大堂(Turn right from Tanglang City on the south side of Liuxian Avenue into Tangkai Road, go straight for 100 meters and turn right to arrive at the entrance lobby of **Shenzhen Nanshan Genpla Hotel**)。

请按图片顺序前往酒店

（二）自驾**(self-driving)**

导航输入：深圳塘朗城君璞酒店

从留仙大道南侧塘朗城右转进入塘开路，直行 100 米右转驶入室内停车场 UG 层。（Turn right from Tanglang City on the south side of   Liuxian Avenue into Tangkai Road, go straight for 100 meters and turn right into UG level of the indoor parking lot.）

请按图片顺序前往酒店