

# Conference Guide

## VCIP 2022

**IEEE Visual Communication and Image  
Processing**

**December 13-16**

**Suzhou**



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VCIP 2022

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## Contents

Sponsors .....	2
Message from the General Chairs .....	4
Message from the Program Chairs .....	6
Organizing Committee .....	8
Area Chairs .....	12
Special Session Chairs .....	13
Conference Information .....	14
Conference Registration.....	14
Future VCIP Conference .....	15
Schedule Manuscript.....	16
Keynotes .....	18
Tutorials .....	23
Panels .....	25
Oral Session .....	27
Demo Session.....	48
Challenge Session .....	49

## **Message from the General Chairs**

On behalf of our organizing committee, we welcome you to the 2022 Visual Communications and Image Processing (VCIP2022) from December 13-16 in 2022. This is the 12th year that VCIP is technically sponsored by IEEE Circuits and Systems Society.

Starting from 1986, VCIP had served as a premier forum in SPIE for the exchange of fundamental research results and technological advances in the field of visual communications and image processing. Starting in 2011, VCIP has been held under the auspices of IEEE. It inherits the tradition of previous conferences in providing fertile ground for engineers and scientists from all over the world to discuss the research frontiers in this field. VCIP promotes exchanges in science and engineering, advancements of scientific research, comparisons of experimental results, and explorations of different scientific approaches and engineering practices for solving real world problems.

We had been planning on a hybrid conference format to allow both onsite and remote attendees, and the Organization Committee members had been working hard to prepare for onsite meeting facilities and services. Unfortunately, just a week before the conference date, we are informed that on-site mode is not possible anymore due to COVID situation. As a result, we had to change the conference from hybrid to an all-virtual conference.

Even though it is an all-virtual conference, we still have a fully-fledged program. This year's VCIP will feature keynote talks, panels, oral sessions, demos, and grand challenges. All the presentations involve top experts in the field of visual communications and image processing. As described in the message from the technical chairs, we adopted the double-blind review process to ensure the paper quality as well as the fairness of paper review.

We would like to thank all the authors, keynote speakers, panellists, area chairs, technical program committee members, reviewers, and best paper award committee members for their critical contributions to VCIP2022. We would like to thank the Visual Signal Processing and Communications Technical Committee (VSPC) for their technical sponsorship and support. We would like to thank IEEE CAS, IEEE Beijing Section, IEEE Beijing Section CAS chapter for their financial sponsorship. We would like to thank IEEE Nanjing Section for their technical sponsorship. We would like to thank CCF Convention Center for agreeing to provide the conference venue and services in the case that the conference were hybrid. We would like to thank our technical program chairs Jiwen Lu, Jingjing Meng, Mathias Wien, and Zhu Li for creating such an outstanding technical program. We would like to thank all of the organizing committee members who have been working so hard for this event which we hope you will enjoy. Special thanks to our local team and volunteers, led by Weiyao Lin and Jianyu Yang, to take care of all the logistics including transitioning at the last minute from hybrid to all-virtual. Finally we would like to thank our industry sponsors Meta, JD, and Baidu for their generosity.

Philip Ogunbona, Xilin Chen, Zicheng Liu  
General Co-Chairs – VCIP 2022

## **Message from the Program Chairs**

On behalf of the VCIP 2022 Technical Program Committee, we warmly welcome you to the IEEE International Conference on Visual Communication and Image Processing (VCIP) in Suzhou, China! VCIP has been a flagship international conference in IEEE and SPIE for the presentation of novel and fundamental research advances in the field of visual communications and image processing since 1986. VCIP 2022 is sponsored by IEEE Circuit and System Society and our industry sponsors including Meta, JD and Baidu.

The VCIP 2022 conference will be held virtually to give attendees around the globe the opportunity to enjoy an interactive program despite the COVID-19 pandemic. This year, we have planned a comprehensive technical program consisting of keynote talks, oral sessions, demo sessions, tutorials, grand challenges, panel discussions, along with ample social events. We will start our first day of the conference with 6 tutorials in three parallel tracks, covering history and latest breakthroughs in various areas in visual communication and image processing. The tutorials are included in the conference registration. Starting on the second day of the conference, we will kickstart our daily technical program with a keynote talk delivered by one of the world's leading researchers, followed by two parallel oral sessions after coffee break. This year, we also have a keynote talk in the afternoon of the second day of the conference, which you probably do not want to miss. Demo sessions and grand challenges are also held on the second day, while panel discussions are held on the third day and fourth day. Finally, a virtual banquet will be on the third day of the conference.

This year, we have received 174 submissions from all over the world. All papers have gone through a rigorous review process by experts in the fields in a

double-blinded manner. 103 good quality papers were accepted for the final conference program. Our paper award committee has reviewed all the accepted papers and selected the highest quality ones for the best paper and best student paper awards, which will be awarded during the conference.

The technical program of VCIP 2022 would not have been possible without the dedicated effort of volunteers of the entire VCIP 2022 technical program committee and the organizing committee. We are most grateful to the authors who have submitted their research work to VCIP 2022, the technical program committee members and review committee members who have contributed significantly to the peer review process, and the general chairs who have supported and supervised the whole organization process of this year's VCIP.

We hope that all of you enjoy the conference!

Best regards,

VCIP2022 Technical Program Co-Chairs

Jingjing Meng, University at Buffalo, United States

Jiwen Lu, Tsinghua University, China

Mathias Wien, RWTH Aachen University, Germany

Zhu Li, University of Missouri, Kansas City, United States

## Organizing Committee

### General Co-chairs

**Philip Ogunbona,**  
University of Wollongong, Australia

**Xilin Chen,**  
Chinese Academy of Sciences, China

**Zicheng Liu,**  
Microsoft, USA

### Program Co-Chairs

**Jiwen Lu,**  
Tsinghua University, China

**Jingjing Meng,**  
University at Buffalo, SUNY, USA

**Mathias Wien,**  
RWTH Aachen University, Germany

**Zhu Li,**  
University of Missouri - Kansas City, USA

### Tutorial Co-Chairs

**Ruiping Wang,**  
Chinese Academy of Sciences, China

**Wei Hu,**  
Peking University, China

### Grand Challenge Co-Chairs

**Dong Liu,**  
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China

**Liqiang Nie,**  
Shandong University, China

**Shan Liu,**



Tencent America, US

### **Panel Chairs**

**Hong Cheng,**

University of Electronic Science and Technology of  
China, China

**Yong Man Ro,**

KAIST, Korea

### **Special Session Chairs**

**Dan Grois,**

Comcast, USA

**Liqiang Nie,**

Shandong University, China

**Petia Radeva,**

University of Barcelona, Spain

### **Demo Chairs**

**Li Li,**

University of Science and Technology of China,  
China

**Zhou Ren,**

Wormpex AI Research, USA

### **Paper award chairs**

**Mingli Song,**

Zhejiang University, China

**Wenjun Zeng,**

Eastern Institute of Technology, China

### **Plenary session chairs**

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Queen Mary University of London, UK

**Junsong Yuan,**

University at Buffalo, SUNY, USA

### **Registration chairs**

**Jiaying Liu,**  
Peking University, China

**Yi-Ling Xu,**  
Shanghai Jiao Tong University, China

### **Publicity Chairs**

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**Ivan Bajic,**  
Simon Fraser University, Canada

**Marta Mrak,**  
BBC, UK

### **Finance Chairs**

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PepsiCo CHQ, USA

### **Industry Chairs**

**Ioannis Katsavounidis,**  
Facebook, USA

**Ning Xu,**  
Kwii, USA

**Yekui Wang,**  
Bytedance, USA

### **Publication Chairs**

**Xinfeng Zhang,**  
University of Chinese Academic of Sciences, China

### **Local Arrangement Chairs**

**Jianyu Yang,**  
Soochow University, China

**Weiyao Lin,**  
Shanghai Jiao Tong University, China

**Sponsorship Chairs**

**Rameswar Panda,**  
IBM, USA

**Zhanyu Ma,**  
Beijing University of Posts and  
Telecommunications, China

## Area Chairs

Carl	J.	Debono
Changick		Kim
Cheolkon		Jung
Dong		Tian
Fernando		Pereira
Gang		Yu
Giuseppe		Valenzise
Haibin		Yan
Hongliang		Li
Jong-Ok		Kim
Junhui		Hou
Li		Li
Luciano	Volcan	Agostini
Marek		Domański
Mengyuan		Liu
Sebastian		Schwarz
Shiliang		Zhang
Wei		Tang
WEIQI		YAN
Xiang		Li
Ye		Luo
Yuxin		Peng
Zhan		Ma
Zhigang		Tu

## Special Session Chairs

### 1. 3D Point Cloud Acquisition, Processing and Communication (3DPC-APC)

**Wei Gao, Ge Li**, Peking University

**Hui Yuan**, Shandong University

**Raouf Hamzaoui**, De Montfort University

**Junhui Hou**, City University of Hong Kong

### 2. Low level vision and signal recovery

**Wei Wu**, Xidian University

**Long Xu**, Chinese Academy of Science

### 3. Cross-media Retrieval, Recommendation, and Reasoning – CR3

**Tian Gan, Jianlong Wu**, Shandong University

**Kankanhalli Mohan**, National University of Singapore

### 4. Immersive Visual Volumetric Content Representation and Compression

**Lu Yu**, Zhejiang University

**Marius Preda**, Telecom SudParis

## **Conference Information**

The VCIP 2022 conference will be held virtually through Zoom from December 13 – 16. If you are registered, you will be able to login to the conference via Zoom. Zoom Links to every session will be sent to each registered attendance via email. There are two ways to log in zoom conference using the room code and their corresponding password, (1) Client login; (2) Website login via <https://zoom.us/join>;

In order to let the conference volunteers easily recognize session chairs and presenters, we hope that all session chairs and presenters should utilize your FULL NAME plus your ROLE in the zoom conference room. For example, if a presenter is named as Bill Smith, he/she should utilize “Bill Smith (Presenter)” as his/her nickname in Zoom conference room. Similarly, a session chair named Mary Smith should utilize “Mary Smith (Session Chair)” as his nickname in the Zoom conference room.

Each paper in the main track will have 10 minutes (about 8 minutes for video, 2 minutes for Q&A). If audiences have questions to ask the presenters, please type your questions in the text board in Zoom conference room. The session chairs will collect your questions and ask the presenters.

We look forward to seeing all of you!

## **Conference Registration**

Anyone who wishes to attend any event of VCIP 2022, including tutorials, keynote, main conference technical sessions, special sessions, panel discussions, challenge sessions and demo sessions must register to attend. There are three types of registrations available for the attendees.

1. In Person Author Registration.
2. In Person Conference Registration.
3. Virtual Conference Registration.

Each accepted main conference paper, demo paper or grand challenge paper, must have at least one author registered by Dec. 13, 2022, in order for the paper to be included in the online conference proceeding in IEEE Xplorer database. More information is available at <https://web.cvent.com/event/71e3779b-ac5b-4bec-89cd-c150fca3461a/summary>

## **Future VCIP Conference**

The 2023 IEEE International Conference on Visual Communications and Image Processing will be held in Jeju, Korea, 2013. More information is available at <http://www.vcip2023.org>

## Schedule Manuscript

Time	Tuesday Dec. 13, 2022	Wednesday Dec. 14, 2022
08:00-08:30	Tutorials A (Coffee Break 10 minutes)  Room 1: 3D Signal Compression and Processing  Room 2: Vision Transformer: More is different  Room 3: Visual Content Creation: history, challenges and applications	
08:30-09:00		Opening Room1
09:00-10:00		Keynote 1 Room 1: Contemporary Visual Computing: A System Perspective
10:00-10:10		Coffee Break
10:10-11:40		Oral 1 Room 1: Machine Learning for Multimedia  Room 2: Learning Based Compression
12:00-14:00	Lunch Break	Lunch Break
14:00-15:30	Tutorials B (Coffee Break 10 minutes)  Room 1: Linear Video Coding and Transmission Schemes for Next Generation Video Applications  Room 2: Representation, Evaluation and Utilities of Point Clouds Room 3: Deep Learning for Light Fields	Oral 2 Room 1: Machine Learning for Multimedia  Room 2: Learning Based Compression
15:30-16:00		Coffee Break
16:00-17:00		Keynote 2 Room 1: New frontiers in machine learning interpretability
17:00-17:10		Grand Challenge Room 1: Tire pattern image classification based on lightweight network  Room 2: Practical end-to-end image compression challenge
17:15-17:40		
17:40-18:00		



Time	Thursday Dec.15, 2022	Friday Dec. 16, 2022
09:00-10:00	Keynote 3 Room 1: The future of video communication	Keynote 4 Room 1: More Is Different: ViTAE elevates the art of computer vision
10:00-10:10	Coffee Break	Coffee Break
10:10-11:40	Oral 3 Room 1 : Machine Learning for Multimedia Room 2: Video Coding	Oral 5 Room 1: Quality of Experience Room 2: Low-level data processing
12:00-14:00	Lunch Break (VSPC- TC meeting, Room 1)	Lunch Break
14:00-15:00	Panel 1 Room 1: Intelligent Medical Imagine	Panel 2 Room 1: Deep Learning based Image and Video Compression
15:00-15:10	Coffee Break	Coffee Break
15:10-16:40	Oral 4 Room 1: Point Cloud Compress Room 2: Quality of Experience	Oral 6 Room 1: Special Session Room 2: Multimedia Content Analysis, Representation and Understanding
17:00-17:30	Award Ceremony Room 1	

## Keynotes

### Keynote 1

**When:** 09:00-10:00, Wednesday, Dec. 14, 2022

**Where:** Room 1

**Title:** Contemporary Visual Computing: A System Perspective

**Speaker:** Prof. **Chang-Wen Chen** (The Hong Kong Polytechnic University)

**Session Chair :** Jingjing Meng (University at Buffalo, SUNY)

**Abstract:** Visual computing, traditionally, is a generic term for all computer science disciplines dealing with images, videos, and other types of visual data. These disciplines mainly include computer graphics, image processing, visualization, computer vision, virtual and augmented reality, and video analytics. This talk shall analyze contemporary visual computing systems from several systematic perspectives. First, contemporary visual data acquisition has shifted from the laboratory in the early days to the fields in recent years with new technical challenges emerging on the visual sensing front. Second, massive visual data acquired for a very diverse range of applications require high-performance computation of visual data via cloud computing. Such extension of visual computing to both ends of the contemporary system now demands pervasive networking to effectively transport such volumetric visual data back and forth. Therefore, the networking of visual data has now become a key component in contemporary visual computing systems which has not been adequately studied before. The investigation of visual computing systems now needs to be significantly deepened to facilitate the researchers to traverse across new domains of exploitation. Several examples of emerging applications with unique design principles will be presented to illustrate the technical challenges we are facing and the potential impacts that contemporary visual computing systems are capable of producing.

**Speaker's Bio:** Prof. Changwen Chen is currently

Chair Professor of Visual Computing at The Hong Kong Polytechnic University. Before his current position, he served as Dean of the School of Science and Engineering at The Chinese University of Hong Kong, Shenzhen from 2017 to 2020, and concurrently as Deputy Director at Peng Cheng Laboratory from 2018 to 2021. Previously, he has been an Empire Innovation Professor at the State University of New York at Buffalo from 2008 to 2021 and the Allan Henry Endowed Chair Professor at the Florida Institute of Technology from 2003 to 2007. He has served as an Editor-in-Chief for T-MM (2014-2016) and T-CSVT (2006-2009) and has received many professional achievement awards, including the prestigious Alexander von Humboldt Award in 2010, SUNY Chancellor's Award for Excellence in Scholarship and Creative Activities in 2016, and UIUC ECE Distinguished Alumni Award in 2019. He is an IEEE Fellow, an SPIE Fellow, and a Member of the Academia Europaea.

## Keynote 2

**When:** 16:00-17:00, Wednesday, Dec. 14, 2022

**Where:** Room 1

**Title:** New frontiers in machine learning interpretability

**Speaker:** Prof. **Mihaela van der Schaar** (University of Cambridge)

**Session Chair:** Mathias Wien (RWTH Aachen University)

**Abstract:** Medicine has the potential to be transformed by machine learning (ML) by addressing core challenges such as time-series forecasts, clustering (phenotyping), and heterogeneous treatment effect estimation. However, to be embraced by clinicians and patients, ML approaches need to be interpretable. So far though, ML interpretability has been largely confined to explaining the predictions of static classifiers. In this keynote, I describe an extensive new framework for ML interpretability. This framework

allows us to 1) interpret ML methods for time-series forecasting, clustering (phenotyping), and heterogeneous treatment effect estimation using feature and example-based explanations, 2) provide personalized explanations of ML methods with reference to a set of examples freely selected by the user, and 3) autonomously (re)discover known scientific concepts using concept activation regions, which are generalizations of concept-based explanations. To learn more about our work in this area, see our website dedicated to this topic

<https://www.vanderschaar-lab.com/interpretable-machine-learning/>

and our github

<https://github.com/vanderschaarlab/Interpretability>.

**Speaker's Bio:** Prof. Mihaela van der Schaar is the John Humphrey Plummer Professor of Machine Learning, Artificial Intelligence and Medicine at the University of Cambridge and a Fellow at The Alan Turing Institute in London. In addition to leading the van der Schaar Lab, Mihaela is founder and director of the Cambridge Centre for AI in Medicine (CCAIM). Mihaela was elected IEEE Fellow in 2009. She has received numerous awards, including the Oon Prize on Preventative Medicine from the University of Cambridge (2018), a National Science Foundation CAREER Award (2004), 3 IBM Faculty Awards, the IBM Exploratory Stream Analytics Innovation Award, the Philips Make a Difference Award and several best paper awards, including the IEEE Darlington Award. Mihaela is personally credited as inventor on 35 USA patents (the majority of which are listed here), many of which are still frequently cited and adopted in standards. She has made over 45 contributions to international standards for which she received 3 ISO Awards. In 2019, a Nesta report determined that Mihaela was the most-cited female AI researcher in the U.K.

### Keynote 3

**When:** 09:00-10:00, Thursday, Dec. 15, 2022

**Where:** Room 1

**Title:** The future of video communication

**Speaker:** Dr. **Baining Guo** (Microsoft Research)

**Session Chair:** Jiwen Lu (Tsinghua University)

**Abstract:** I will talk about what the future video communication system might look like, covering both the front-end, the back-end and some fundamental theoretical issues. For the front end, I will talk about 3D immersive video communication. For the back end, I will talk about neural codec, which is on its way to replace our traditional codec. For theoretical issues, I will touch on both the fundamental changes brought by the Transformer in the image and video processing domain and some fundamental questions that we only begin to ponder.

**Speaker's Bio:** Dr. Baining Guo is a Distinguished Scientist of Microsoft Corporation. His main research areas are computer graphics, geometric modeling, virtual reality, and computer vision. Prior to joining Microsoft Research in 1999, he was a senior staff researcher with Intel Research in the Silicon Valley. Dr. Guo got his BS degree from Beijing University and his MS and PhD degrees from Cornell University. Dr. Guo is an IEEE fellow and ACM fellow. He is also a member of Canadian Academy of Engineering.

### Keynote 4

**When:** 09:00-10:00, Friday, Dec. 16, 2022

**Where:** Room 1

**Title:** More Is Different: ViTAE elevates the art of computer vision

**Speaker:** Prof. Dacheng Tao (JD Explore Academy)

**Session Chair:** Zhu Li (University of Missouri-Kansas City)

**Abstract:** Deep learning has witnessed remarkable success in many application domains and is now shifting towards training super deep models with extremely large scale labeled or unlabeled data on

expensive computational resources. In this talk, I will present some of the recent progress. Specifically, I will first show the PAC-Bayes generalization bounds and present some practical implications for new algorithm designs. Then, I will propose an efficient architecture design for visual transformers, named ViTAE, by exploring the intrinsic inductive biases. Next, he will introduce a novel self-supervised training method called RegionCL, which uses a simple region swapping strategy to build effective supervisory signals from rich positive/negative pairs at both the instance level and the region level. It greatly advances the ability of representative self-supervised learning frameworks including MoCo, SimCLR, and SimSiam. Finally, some promising applications of visual transformers and self-supervised learning will be presented, including image classification, object detection, semantic segmentation, and pose estimation.

**Speaker's Bio:** Prof. Dacheng Tao is the Inaugural Director of the JD Explore Academy and a Senior Vice President of JD.com. He is also an advisor and chief scientist of the digital science institute in the University of Sydney. He mainly applies statistics and mathematics to artificial intelligence and data science, and his research is detailed in one monograph and over 200 publications in prestigious journals and proceedings at leading conferences. He received the 2015 Australian Scopus-Eureka Prize, the 2018 IEEE ICDM Research Contributions Award, and the 2021 IEEE Computer Society McCluskey Technical Achievement Award. He is a fellow of the Australian Academy of Science, the World Academy of Sciences, the Royal Society of NSW, AAAS, ACM, IAPR and IEEE.

## Tutorials

### Tutorial 1

**Topic:** 3D Signal Compression and Processing

**When:** 08:00-11:40, Tuesday, Dec. 13, 2022

**Where:** Room 1

**Session Chair:** Jin Zeng (Tongji University)

**Lecturer:**

- Xianming Liu (Harbin Institute of Technology)
- Yuanchao Bai (Harbin Institute of Technology)
- Wenbo Zhao (Peng Cheng Laboratory)
- Zhenyu Li (Harbin Institute of Technology)

**Tutorial website:**

<https://bychao100.github.io/blog/2022/vcip-tutorial/>

### Tutorial 2

**Topic:** Vision Transformer: More is different

**When:** 08:00-11:40, Tuesday, Dec.13, 2022

**Where:** Room 2

**Session Chair :** Yuanfang Guo (Beihang University)

**Lecturer:**

- Qiming Zhang (The University of Sydney)
- Yufei Xu (The University of Sydney)
- Jing Zhang (The University of Sydney)
- Dacheng Tao (JD.com, Inc.)

Tutorial website:

<https://rogerzhangzz.github.io/talks/2022-12-13-VCIP-tutorial>

### Tutorial 3

**Topic:** Visual Content Creation: history, challenges and applications.

**When:** 08:00-11:40, Tuesday, Dec. 13, 2022

**Where:** Room 3

**Session Chair :** Xinfeng Zhang (University of Chinese Academy of Sciences)

**Lecturer:**

- Chenfei Wu (Microsoft Research Asia)
- Nan Duan (Microsoft Research Asia)

## **Tutorial 4**

**Topic:** Linear Video Coding and Transmission Schemes for Next Generation Video Applications

**When:** 14:00-17:10, Tuesday, Dec.13, 2022

**Where:** Room 1

**Session Chair:** Zhanyu Ma (Beijing University of Posts and Telecommunications)

**Lecturer:**

- Anthony Trioux (Univ. Polytechnique Hauts-de-France/INSA Hauts-de-France)
- François-Xavier Coudoux (Univ. Polytechnique Hauts-de-France/INSA Hauts-de-France)
- Marco Cagnazzo (Institut Polytechnique de Paris/University of Padua)
- Michel Kieffer (Univ. Paris-Saclay)

**Tutorial website:**

<https://a-trioux.github.io/LVCT/>

## **Tutorial 5**

**Topic:** Representation, Evaluation and Utilities of Point Clouds

**When:** 14:00-17:10, Tuesday, Dec. 13, 2022

**Where:** Room 2

**Session Chair :** Ruiping Wang (Institute of Computing Technology, Chinese Academy of Sciences)

**Lecturer:**

- Weisi Lin (Nanyang Technological University)

**Tutorial website:**

<https://personal.ntu.edu.sg/wslin/VCIP22-Tutorial.html>

## **Tutorial 6**

**Topic:** Deep Learning for Light Fields

**When:** 14:00-17:10, Tuesday, Dec. 13, 2022

**Where:** Room 3

**Session Chair:** Siheng Chen (Shanghai Jiao Tong University)

**Lecturer:**

- Junhui Hou (City University of Hong Kong)

**Tutorial website:**

<https://www.cs.cityu.edu.hk/~junhuhou/Tutorial>



## Panels

### Panel 1

**Topic:** Intelligent Medical Imaging

**When:** 14:00-15:00, Thursday Dec. 15, 2022

**Where:** Room 1

**Panel Discussion Format:**

- Each Panelist will first present 8 minutes on his/her intelligent medical imaging research work (48 minutes)
- Moderator will ask a few common questions for the panelists to answer (30 minutes)
- Open to the audience for more questions (12 minutes)
- Each panelist will be asked to share a one-sentence remarks on intelligent medical imaging

**Moderator:** Prof. S Kevin Zhou

**Panelists:**

- Prof. Yuan Feng (Shanghai Jiao Tong University)
- Prof. Qian Wang (ShanghaiTech University)
- Prof. Yinghuan Shi (Nanjing University)
- Prof. Xiahai Zhuang (Fudan University)
- Prof. Wenxuan Liang (University of Science & Technology of China)
- Prof. Dan Wu (Zhejiang University)

### Panel 2

**Topic:** Deep Learning based Image and Video Compression

**When:** 14:00-15:00, Friday Dec.16, 2022

**Where:** Room 1

**Panel Discussion Format:**

- Each Panelist will first present 6-10 minutes on the learning based image/video compression he/she is working on (30-45 minutes)
- Moderator will ask a few common questions for the panelists to answer (30 minutes)
- Open to the audience for more questions (15 minutes)

- Each panelist will be asked to share a one-sentence remarks on learning based image/video compression

**Moderator:** Prof. Siwei Ma

**Panelists:**

**Prof. Lu Yu** (Zhejiang University)

**Prof. Zhan Ma** (Nanjing University)

**Prof. Dong Liu** (University of Science and Technology of China)

**Dr. Jiaying Liu** (Peking University)

**Yan Wang** (Tsinghua University)

## Oral Session

### Oral 1

#### Topic 1: Machine Learning for Multimedia

**When:** 10:10 – 11:40, Wednesday, Dec. 14, 2022

**Where:** Room 1

**Session Chair:** Mengyuan Liu (Sun Yat-sen University)

1. One Shot Object Detection Via Hierarchical Adaptive Alignment  
*Enquan Zhang (Xidian University); Cheolkon Jung (Xidian University)\**
2. BAM: A Bidirectional Attention Module for Masked Face Recognition  
*MUHAMMAD SAAD SHAKEEL (Guangdong University of Petrochemical Technology)\**
3. MCascade R-CNN: A Modified Cascade R-CNN for Detection of Calcified on Coronary Artery Angiography Images  
*Wei Wang (Beijing University of Posts and Telecommunications)\*; Yi Zhang (Beijing University of Posts and Telecommunications); Xiaofei Wang (Beijing University of Posts and Telecommunications); Honggang Zhang (Beijing University of Posts and Telecommunications); lihua xie (fuwai hospital); Bo Xu (Fuwai Hospital)*
4. ACCR: Auto-labeling for Ancient Chinese Handwritten Characters Recognition on CNN  
*Peikun Wu (Nankai University); Yang Xin (Nankai University); Fuhao Guo (Nankai University); Li Wang (China Institute of Science and Technology Information); Cihan Ruan (Santa Clara University)\**
5. Improved PSP-Net Segmentation Network for Automatic Detection of Neovascularization in Color Fundus Images  
*Qiuming Liu (Jiangxi University of Science and*

*Technology)\*; Shen Wang (Jiangxi University of Science and Technology); Yulan Dai (Central South University); zhang jin tao (zhangjintao)*

6. Weakly Supervised Region-Level Contrastive Learning for Efficient Object Detection

*Yuang Deng (Shanghai Jiao Tong University)\*; Yuhang Zhang (Shanghai Jiao Tong University); Wenrui Dai (Shanghai Jiao Tong University); xiaopeng zhang (Huawei Cloud EI ); Hongkai Xiong (Shanghai Jiao Tong University)*

7. A Large-scale Sports Tracking Dataset and Progressive Re-detection Based Sports Tracking

*Han Wang (Shanghai Jiao Tong University)\*; xiaojun zhou (MIGU Co.,Ltd, Beijing, China); qinyu xu (MIGU Co.,Ltd, Beijing, China); huaqiang ren (MIGU Co.,Ltd, Beijing, China); Rong Xie (Shanghai Jiao Tong University); Li Song (Shanghai Jiao Tong University)*

8. PickDet: A Detection Framework for Aerial-view Scene

*Cheng Lyu (Beijing University of Posts and Telecommunications)\*; Xiao Deng (Beijing University of Posts and Telecommunications); Shizun Wang (Beijing University of Posts and Telecommunications); Ming Wu (Beijing University of Posts and Telecommunications); Chuang Zhang (Beijing University of Posts and Telecommunications)*

9. ML-FDA: Meta-Learning via Feature Distribution Alignment for Few-Shot Learning

*Yuwen Li (Beihang university); Binghao Liu (Beihang University); Shuchang LYU (Beihang University); lijiang chen (Beihang University); Qi Zhao (Beihang University)\*; Wenquan Feng (Beihang University)*

## **Topic 2: Learning Based Compression**

**When:** 10:10 – 11:40, Wednesday, Dec. 14, 2022

**Where:** Room 2

**Session Chair:** **Weiqi Yan** (Auckland University of Technology)

1. Learned Lossless JPEG Transcoding via Joint Lossy and Residual Compression  
*Xiaoshuai Fan (University of Science and Technology of China); Xin Li (University of Science and Technology of China); Zhibo Chen (University of Science and Technology of China)\**
2. CNN-Based Post-Processing Filter for Video Compression with Multi-Scale Feature Representation  
*Zhanyuan Qi (Xidian University); Cheolkon Jung (Xidian University)\*; Yang Liu (OPPO Mobile); Ming Li (OPPO)*
3. Neural Frank-Wolfe Policy Optimization for Region-of-Interest Intra-Frame Coding with HEVC/H.265  
*Yung-Han Ho (NCTU); Chia Hao Kao (National Yang Ming Chiao Tung University)\*; Wen-Hsiao Peng (National Yang Ming Chiao Tung University); Ping-Chun Hsieh (National Chiao Tung University)*
4. A Learning-based Approach for Martian Image Compression  
*Qing Ding (BUAA); Mai Xu (BUAA)\*; Shengxi Li (Beihang University); Xin Deng (Beihang university); Qiu Shen (Nanjing University); Xin Zou (Beijing Institute of Spacecraft System Engineering)*
5. Frequency-aware Learned Image Compression for Quality Scalability  
*Hyomin Choi (INTERDIGITAL COMMUNICATIONS INC)\*; Fabien Racape (Interdigital); Shahab Hamidi-Rad (InterDigital); Mateen Ulhaq (interDigital); Simon Feltman*

*(InterDigital)*

6. Reducing The Mismatch Between Marginal and Learned Distributions in Neural Video Compression  
*Muhammet Balcilar (InterDigital)\*; Bharath Bhushan Damodaran (InterDigital R&D); PIERRE HELLIER (Interdigital (Technicolor))*
  
7. High-frequency guided CNN for video compression artifacts reduction  
*Li Yu (Nanjing University of Information Science and Technology)\*; Wenshuai Chang (Nanjing University of Information Science & Technology); Qingshan Liu (Nanjing University of Information Science & Technology); Moncef Gabbouj (Tampere University)*
  
8. Autoencoder-based intra prediction with auxiliary feature  
*Luhang Xu (Guangdong OPPO Mobile Telecommunications Corp., Ltd.)\*; Yue Yu (Guangdong OPPO Mobile Telecommunications Corp., Ltd.); Haoping Yu (Guangdong OPPO Mobile Telecommunications Corp., Ltd.); Dong Wang (Guangdong OPPO Mobile Telecommunications Corp., Ltd.)*
  
9. On Pre-chewing Compression Degradation for Learned Video Compression  
*Man M. Ho (Hosei University); Heming Sun (Waseda University, Japan); Zhiqiang Zhang (Hosei University); Jinjia Zhou (Hosei University)\**

## **Oral 2**

### **Topic 1: Machine Learning for Multimedia**

**When:** 14:00 – 15:30, Wednesday, Dec. 14, 2022

**Where:** Room 1

**Session Chair:** **Yongxin Ge** (Chongqing University)

1. Clothing Retrieval from Channel Attention to KN Loss Learning

*Kuan-Hsien Liu (National Taichung University of Science and Technology)\*; Yu-Hsiang Wu (National Taichung University of Science and Technology); Tsung-Jung Liu (National Chung Hsing University)*

2. DE-CrossDet: Divisible and Extensible Crossline Representation for Object Detection

*Hefei Mei (University of Electronic Science and Technology of China)\*; Hongliang Li (University of Electronic Science and Technology of China); Heqian Qiu (University of Electronic Science and Technology of China); Jianhua Cui (University of Electronic Science and Technology of China); Longrong Yang (University of Electronic Science and Technology of China)*

3. Mask-Guided Transformer for Human-Object Interaction Detection

*Daocheng Ying (Shanghai Jiao Tong University); Hua Yang (Shanghai Jiao Tong University)\*; Jun Sun (SJTU)*

4. ERINet: Effective Rotation Invariant Network for Point Cloud based Place Recognition

*Shichen Weng (Peking University); Ge Li (SECE, Shenzhen Graduate School, Peking University)\*; Ruonan Zhang (Peking University, shenzhen graduate school)*

5. CdCLR: Clip-Driven Contrastive Learning for Skeleton-Based Action Recognition

*Rong Gao (Tianjin University)\*; Xin Liu (Lappeenranta-Lahti University of Technology LUT); Jingyu Yang (Tianjin University); Huanjing Yue (Tianjin University)*

6. Asynchronous Autoregressive Prediction for Satellite Anomaly Detection

*Peng Liu (Beijing Institute of Spacecraft System Engineering)\*; Haopeng Zhang (Beijing Institute of Spacecraft System Engineering); Lifang Yuan*

*(Beijing Institute of Spacecraft System Engineering); Borui Zhang (Tsinghua University); Chengkun Wang (Tsinghua University)*

7. Semantic Compensation Based Dual-Stream Feature Interaction Network for Multi-oriented Scene Text Detection

*Siyan Wang (Tianjin University); Sumei Li (Tianjin University)\**

8. Annotating Only at Definite Pixels: A Novel Weakly Supervised Semantic Segmentation Method for Sea Fog Recognition

*Xun Zhu (Beijing University of Posts and Telecommunications)\*; Mengqiu Xu (Beijing University of Posts and Telecommunications); Ming Wu (Beijing University of Posts and Telecommunications); Chuang Zhang (Beijing University of Posts and Telecommunications); Bin Zhang (BUPT)*

9. Cross-Layer Feature based Multi-Granularity Visual Classification

*Junhan Chen (Beijing University of Posts and Telecommunications); Dongliang Chang (Beijing University of Posts and Telecommunications); Jiyang Xie (Beijing University of Posts and Telecommunications); Ruoyi Du (Beijing University of Posts and Telecommunications); Zhanyu Ma (Beijing University of Posts and Telecommunications)\**

## **Topic 2: Learning Based Compression**

**When:** 14:00 – 15:30, Wednesday, Dec. 14, 2022

**Where:** Room 2

**Session Chair:** Ye Luo (Tongji University)

1. End-to-end Image Compression with Swin-Transformer

*Meng Wang (City University of Hong Kong)\*; Kai Zhang (Bytedance Inc.); Li Zhang (Bytedance Inc.);*



*Yue Li (Bytedance Inc.); Junru Li (Bytedance Inc.); Yue Wang (Beijing ByteDance Technology Co., Ltd.); Shiqi Wang (City University of Hong Kong)*

2. Rate Controllable Learned Image Compression Based on RFL Model

*Saiping Zhang (Xidian University)\*; Luge Wang (Xidian University); Xionghui Mao (Xidian University); FuZheng Yang (Xidian University); Shuai Wan (Northwestern Polytechnical University)*

3. Deep Reference Frame Interpolation based Inter Prediction Enhancement for Versatile Video Coding

*Jianghao Jia (Wuhan University); Zizheng Liu (Tencent); Zhenzhong Chen (Wuhan University)\*; Xiaozhong Xu (Tencent America); Shan Liu (Tencent America)*

4. Human pose-based video compression via forward-referencing using deep learning

*S M Ataul Karim Rajin (Federation University)\*; Manzur Murshed (Federation University Australia); Manoranjan Paul (Charles Sturt University, Australia); Shyh Wei Teng (Federation University Australia); Jiangang Ma (Federation University Australia)*

5. Improving Latent Quantization of Learned Image Compression with Gradient Scaling

*Heming Sun (Waseda University, Japan)\*; Lu Yu (Zhejiang University); Jiro Katto (Waseda University)*

6. Multi-stage locally and long-range correlated feature fusion for Learned In-loop Filter in VVC

*Birendra Kathariya (University of Missouri-kansas City)\*; Zhu Li (university of missouri-kansas city); Hongtao Wang (Qualcomm); Geert Van der Aweera (Qualcomm)*

7. Generalized Gaussian Distribution Based Distortion Model for the H.266/VVC Video Coder  
*Hongkui Wang (Hangzhou Dianzi University)\*; Junhui Liang (HUST); Li Yu (HUST); Yiyin Gu (Hangzhou Dianzi University); Yin Haibing (Haibing Yin)*
8. History-parameter-based Affine Model Inheritance  
*Kai Zhang (Bytedance Inc.)\*; Li Zhang (Bytedance Inc.); Zhipin Deng (Bytedance Inc.); Na Zhang (Bytedance Inc.); Yang Wang (Bytedance Inc.)*

### Oral 3

#### **Topic 1: Machine Learning for Multimedia**

**When:** 10:10 – 11:40, Thursday, Dec. 15, 2022

**Where:** Room 1

**Session Chair:** **Yansong Tang** (Tsinghua University)

1. On Data Annotation Efficiency for Image Based Crowd Counting  
*Tianfang Ma (School of Microelectronics, Tianjin University)\*; Shuoyan Liu (National University of Singapore); Qian Wang (Durham University)*
2. Blood Volume Pulse Signal Extraction based on Spatio-Temporal Low-Rank Approximation for Heart Rate Estimation  
*Kosuke Kurihara (Tokyo university of science)\*; Yoshihiro Maeda (Tokyo University of Science); Daisuke Sugimura (Tsuda University); Takayuki Hamamoto (Tokyo University of Science)*
3. Space and Level Cooperation Framework for Pathological Cancer Grading  
*Xiaotian Yu (Zhejiang University); Zunlei Feng (Zhejiang University)\*; Yuexuan Wang (The University of Hong Kong); Thomas Kwok To Li (The University of Hong Kong); Xiuming Zhang (Zhejiang University)*

4. Dual-stream Self-attention Network for Image Captioning  
*Boyang Wan (Jiangxi University of Finance and Economics)\*; Wenhui Jiang (Jiangxi University of Finance and Economics); Yuming Fang (Jiangxi University of Finance and Economics)*
5. STSI: Efficiently Mine Spatio-Temporal Semantic Information between Different Multimodal for Video Captioning  
*Huiyu Xiong (University of Electronic Science and Technology of China)\*; Lanxiao Wang (University of Electronic Science and Technology of China)*
6. Texture-aware Network for Smoke Density Estimation  
*Xue Xia (Jiangxi University of Finance and Economics)\*; Kun Zhan (Jiangxi University of Finance and Economics); Yajing Peng (Jiangxi University of Finance and Economics); Yuming Fang (Jiangxi University of Finance and Economics)*
7. Identify, Guess and Reconstruct: Three Principles for Cloud Removal Task  
*Sibo Wu (Beijing University of Posts and Telecommunications); Mengqiu Xu (Beijing University of Posts and Telecommunications); Ming Wu (Beijing University of Posts and Telecommunications)\*; Chuang Zhang (Beijing University of Posts and Telecommunications); Hua Shen (Baiyanghe Power Plant of Shandong Huaneng Power Development, LTD., Shandong, China)*
8. MAiVAR: Multimodal Audio-Image and Video Action Recognizer  
*Muhammad Bilal B Shaikh (Edith Cowan University)\*; Douglas Chai (Edith Cowan University); Syed Islam (Edith Cowan University); Naveed Akhtar (The University of Western Australia)*

9. Blind Gaussian Deep Denoiser Network using Multi-Scale Pixel Attention  
*RAMESH KUMAR THAKUR (Indian Institute of Technology Patna, India)\*; SUMAN KUMAR MAJI (INDIAN INTITUTE OF TECHNOLOGY-PATNA)*

**Topic 2: Video Coding**

**When:** 10:10 – 11:40, Thursday, Dec. 15, 2022

**Where:** Room 2

**Session Chair:** **Cheolkon Jung** (Xidian University)

1. Performance Analysis of WebRTC Embedding Optimized HEVC CodeC  
*Zhenyu Liu (Tsinghua University)\**
2. An Efficient Content-aware Downsampling-based Video Compression Framework  
*Hao Jiang (Shanghai Jiao Tong University)\*; Li Chen (Shanghai Jiao Tong University)*
3. Fast Inter Prediction Mode Decision Method Based On Random Forest For H.266/VVC  
*Kundan xie (Xidian University)\*; Jianquan Zhou (Xidian University); Saiping Zhang (Xidian University); FuZheng Yang (Xidian University)*
4. Global Homography Motion Compensation for Versatile Video Coding  
*Yao Li (University of Science and Technology of China); Zhuoyuan Li (University of Science and Technology of China); Li Li (University of Science and Technology of China)\*; Dong Liu (University of Science and Technology of China); Houqiang Li (University of Science and Technology of China)*
5. Adaptive boundary width of Geometric Partitioning Mode for Beyond Versatile Video Coding  
*Haruhisa Kato (KDDI Research Inc.)\* Yoshitaka Kidani (KDDI Research Inc.); Kei Kawamura (KDDI Research); Sei Naito (KDDI Research)*

6. Enhanced motion list reordering for video coding  
*Yang Wang (Bytedance Inc.)\*; Kai Zhang (Bytedance Inc.); Na Zhang (Bytedance Inc.); Zhipin Deng (Bytedance Inc.); Li Zhang (Bytedance Inc.)*
7. Fast CU Partition Method Based on Extra Trees for VVC Intra Coding  
*Kaijie Wang (Xidian University)\*; Hong Liang (State Key Laboratory of ISN, Xidian University, Xi'an, China); Saiping Zhang (Xidian University); Fuzheng yang (Xidian University)*
8. Efficient Interpolation Filters for Chroma Motion Compensation in Video Coding  
*Xi Xie (City University of Hong Kong)\*; Kai Zhang (Bytedance Inc.); Li Zhang (Bytedance Inc.); Meng Wang (City University of Hong Kong); Junru Li (Bytedance Inc.); Shiqi Wang (City University of Hong Kong)*
9. Block Importance Mapping for Video Encoding  
*Jack Enhorn (Ericsson Research)\*; Christopher Hollmann (Ericsson Research); Rickard Sjöberg (Ericsson Research); Jacob Strom ("Ericsson Research, Sweden"); Per Wennersten (Ericsson)*

## Oral 4

### Topic 1: Point Cloud Compress

**When:** 15:10 – 16:40, Thursday, Dec. 15, 2022

**Where:** Room 1

**Session Chair:** **Zheng Zhu** (PhiGent Robotics)

1. Near-lossless Point Cloud Geometry Compression Based on Adaptive Residual Compensation  
*Dingquan Li (Peng Cheng Laboratory)\*; Jing Wang (Peng Cheng Laboratory); Ge Li (SECE, Shenzhen Graduate School, Peking University)*
2. A efficient predictive wavelet transform for LiDAR point cloud attribute compression  
*Yueru Chen (Artificial Intelligence Research Center*

*Peng Cheng Laboratory)\*; Jing Wang (Artificial Intelligence Research Center Peng Cheng Laboratory); Ge Li (Peking University)*

3. Geometry Reconstruction for Spatial Scalability in Point Cloud Compression Based on the Prediction of Neighbours' Weights  
*Zhang Chen (Northwestern Polytechnical University); Shuai Wan (Northwestern Polytechnical University)\**
4. RGBD-based Real-time Volumetric Reconstruction System: Architecture Design and Implementation  
*Kai Zhou (Shanghai Jiao Tong University); Shuai Guo (Shanghai Jiaotong University); Jingchuan Hu (Shanghai Jiao Tong University); Jionghao Wang (Shanghai Jiao Tong University); Qiuwen Wang (Shanghai Jiao Tong University); Li Song (Shanghai Jiao Tong University)\**
5. PCGFormer: Lossy Point Cloud Geometry Compression via Local Self-Attention  
*Gexin Liu (Hangzhou Normal University); Jianqiang Wang (Nanjing University); Dandan Ding (Hangzhou Normal University)\*; Zhan Ma (Nanjing University)*
6. Reduced Reference Quality Assessment for Point Cloud Compression  
*Yipeng Liu (Shanghai Jiao Tong University)\*; Qi Yang (Tencent); Yiling Xu (Shanghai Jiao Tong University)*
7. Distribution-aware Low-bit Quantization for 3D Point Cloud Networks  
*Dingchang Hu (Tsinghua University)\*; Siang Chen (Tsinghua University); Huazhong Yang (Tsinghua University); Guijin Wang (Tsinghua University)*
8. A Fast Motion Estimation Method With Hamming Distance for LiDAR Point Cloud Compression

*Yuhao An (Peking University Shenzhen Graduate School); Yiting Shao (Peking University Shenzhen Graduate School); Ge Li (SECE, Shenzhen Graduate School, Peking University)\*; Wei Gao (SECE, Shenzhen Graduate School, Peking University); Shan Liu (Tencent America)*

9. Azimuth Adjustment Considering LiDAR Calibration for the Predictive Geometry Compression in G-PCC  
*Youguang Yu (Xidian University)\*; Wei Zhang (Xidian University); FuZheng Yang (Xidian University)*

## **Topic 2: Quality of Experience**

**When:** 15:10 – 16:40, Thursday, Dec. 15, 2022

**Where:** Room 2

**Session Chair:** **Junlin Hu** (Beihang University)

1. Video Quality Assessment based on Quality Aggregation Networks  
*Wei Wu (Wuhan University); Yingxue Zhang (Tianjin University of Science & Technology); Yaosi Hu (Wuhan University); Zhenzhong Chen (Wuhan University)\*; Shan Liu (Tencent America)*
2. No-reference Stereoscopic Image Quality Assessment Based on Parallel Multi-scale Perception  
*Ziyi Zhang (Ziyi Zhang); Sumei Li (Tianjin University)\**
3. MSCI: A Multi-Source Composite Image Database for Compression Distortion Quality Assessment  
*Xiaofang Zhang (Shenzhen University); Zhuowei Xu (Shenzhen University); Zhiheng Lin (Jimei University); Miaohui Wang (Shenzhen University)\**
4. No Reference Stereoscopic Video Quality Assessment based on Human Vision System  
*Xiaofang Zhang (Tianjin University); Sumei Li*

*(Tianjin University)\**

5. A Fast and Effective Framework for Camera Calibration in Sport Videos  
*Neng Zhang (Queen Mary University of London)\*; Ebroul Izquierdo (Queen Mary University of London)*
6. Ultra-High Resolution Image Segmentation with Efficient Multi-Scale Collective Fusion  
*Guohao Sun (Beijing University of Posts and Telecommunications); Haibin Yan (Beijing University of Posts and Telecommunications)\**
7. Multi-information Aggregation Network for Fundus Image Quality Assessment  
*Yuan Li (Shenzhen University); guanghai Yue (Shenzhen university)\*; Lvyin Duan (Shenzhen University); Honglv Wu (Shenzhen University); tianfu Wang (Shenzhen university)*
8. Semantic Attribute Guided Image Aesthetics Assessment  
*Jiachen Duan (Xidian University); Pengfei Chen (Xidian University); Leida Li (Xidian University)\*; Jinjian Wu (Xidian University); Guangming Shi (Xidian University)*
9. Quality Assessment of Screen Content Images Based on Multi-Pathway Convolutional Neural Network  
*Mengyao Li (Tianjin University); Sumei Li (Tianjin University)\**

## **Oral 5**

### **Topic 1: Quality of Experience**

**When:** 10:10 – 11:40, Friday, Dec. 16, 2022

**Where:** Room 1

**Session Chair:** **Jiahuan Zhou** (Peking University)

1. A Sparsity Analysis of Light Field Signal For Capturing Optimization of Multi-view Images  
*Ying Wei (Chongqing University of Posts and*



*Telecommunications)\*; Changjian Zhu (Huazhong University of science and technology)*

2. Spectral Analysis of Aerial Light Field for Optimization Sampling and Rendering of Unmanned Aerial Vehicle

*Qiuming Liu (Jiangxi University of Science and Technology)\*; yichen Wang (Jiangxi University of Science and Technology); Ying Wei (Chongqing University of Posts and Telecommunications); Lei Xie (Jiangxi University of Science and Technology); changjian zhu (Huazhong University of Science and Technology)*

3. High-Speed Scene Reconstruction from Low-Light Spike Streams

*Yanchen Dong (Peking University); Jing Zhao (Peking University); Ruiqin Xiong (Peking University)\*; Tiejun Huang (Peking University)*

4. MRIQA: Subjective Method and Objective Model for Magnetic Resonance Image Quality Assessment

*Qi Chen (Institute of Image Communication and Network Engineering, Shanghai Jiao Tong University)\*; Fang Liu (Department of Radiology, Renji Hospital, School of Medicine, Shanghai Jiao Tong University); Huiyu Duan (Shanghai Jiao Tong University); Yao Wang (Department of Radiology, Renji Hospital, School of Medicine, Shanghai Jiao Tong University); Xionghuo Min (Shanghai Jiao Tong University); Yan Zhou (Department of Radiology, Renji Hospital, School of Medicine, Shanghai Jiao Tong University); Guangtao Zhai (Shanghai Jiao Tong University)*

5. Recurrent Network with Enhanced Alignment and Attention-Guided Aggregation for Compressed Video Quality Enhancement

*Xiaodi Shi (Zhejiang Dahua Technology Co.,Ltd)\*; Jucai Lin (Zhejiang Dahua Technology Co.,Ltd); Dong Jiang (Zhejiang Dahua Technology Co.,Ltd);*

*Chunmei Nian (Zhejiang Dahua Technology Co.,Ltd); Jun Yin (Dahua Technology Co., Ltd.)*

6. On the Importance of Temporal Dependencies of Weight Updates in Communication Efficient Federated Learning  
*Homayun Afrabandpey (Nokia Technologies)\*; Goutham Rangu (Nokia Technologies); Honglei Zhang (Nokia Technologies); Francesco Cricri (Nokia Technologies); Emre Aksu (Nokia Technologies); Hamed Rezazadegan Tavakoli (Nokia Technologies)*
  
7. SAD360: Spherical Viewport-Aware Dynamic Tiling for 360-Degree Video Streaming  
*Zhijun Li (Beijing University of Posts and Telecommunications)\*; yumei wang (Beijing University of Posts and Telecommunications); yu liu (Beijing University of Posts and Telecommunications)*
  
8. Distinguishing Computer-generated Images from Photographic Images: A Texture-Aware deep learning-based Method  
*Zicheng Zhang (Shanghai Jiaotong university)\*; Wei Sun (Shanghai Jiao Tong University); Xionghuo Min (Shanghai Jiao Tong University); Tao Wang (Shanghai Jiaotong University); Wei Lu (Shanghai Jiao Tong University); Guangtao Zhai (Shanghai Jiao Tong University)*
  
9. Flocking Birds of a Feather Together: Dual-step GAN Distillation via Real-Fake Samples  
*Jingwen Ye (National University of Singapore)\*; Zunlei Feng (Zhejiang University); Xinchao Wang (National University of Singapore)*

## **Topic 2: Low-level data processing**

**When:** 10:10 – 11:40, Friday, Dec.16, 2022

**Where:** Room 2

**Session Chair:** **Yue Zhao** (Chongqing University of

## Posts and Telecommunications)

1. DesnowFormer: an effective transformer-based image desnowing network  
*Ting Zhang (Fuzhou University); Nanfeng Jiang (Fuzhou University); Lin Junhong (Fuzhou University); JieLian Lin (Fuzhou University); Tiesong Zhao (Fuzhou University)\**
2. A Comparative Study of Cross-Model Universal Adversarial Perturbation for Face Forgery  
*Shuo-Yen Lin (National Central University)\*; Jun-Cheng Chen (Academia Sinica); Jia-Ching Wang (National Central University)*
3. A Privacy-Preserving and End-to-End-Based Encrypted Image Retrieval Scheme  
*Zhixun Lu (Jinan University); Qihua Feng (Jinan University); PEIYA LI (Jinan University)\**
4. Image Inpainting with Frequency Domain Wavelet Convolution  
*Jain-Kai Huang (National Chung Hsing University); Tsung-Jung Liu (National Chung Hsing University)\*; Kuan-Hsien Liu (National Taichung University of Science and Technology)*
5. Visual Analysis motivated Super-Resolution Model for Image Reconstruction  
*Huifen Wang (China Telecom); junda xue (chinatelecom); Mingchuan Yang (China Telecom Beijing Research Institute); Yuan Zhang (China Telecom); Yuan Zhang (Zhejiang University)\**
6. Single Image Super-Resolution Using ConvNeXt  
*Chenghui You (Xiamen University of Technology)\*; Chaoqun Hong (Xiamen University of Technology)*
7. Face Super Resolution based on Contrastive Learning  
*Wenlin Zhang (Tianjin University); Sumei Li*

*(Tianjin University)\*; Liqin Huang (FUZHOU University)*

8. Refine-PU: A Graph Convolutional Point Cloud Upsampling Network using Spatial Refinement  
*Yilin Liu (Beijing University of Posts and Telecommunications); Yumei Wang (Beijing University of Posts and Telecommunications)\*; Yu Liu (Beijing University of Posts and Telecommunications)*
9. Controllable Space-Time Video Super-Resolution via Enhanced Bidirectional Flow Warping  
*Yuantong Zhang (wuhan university); Huairui Wang (Wuhan University); Zhenzhong Chen (Wuhan University)\**

## **Oral 6**

### **Topic 1: Special Session**

**When:** 15:10 – 16:40, Friday, Dec. 16, 2022

**Where:** Room 1

**Session Chair:** **Yueqi Duan** (Tsinghua University)

1. Augmented Normalizing Flow for Point Cloud Geometry Coding  
*Shio-Yu Lee (National Chung Cheng University); Ji-Jin Chiu (National Chung Cheng University); Jui-Chiu Chiang (National Chung Cheng University)\*; Wen-Hsiao Peng (National Yang Ming Chiao Tung University); Wen-Nung Lie (National Chung Cheng University)*
2. PointNetGeM: Simple and Efficient Point Cloud Based Network for Place Recognition  
*Keli Wen (Peking University, Shenzhen Graduate School); Ruonan Zhang (Peking University, shenzhen graduate school); Ge Li (SECE, Shenzhen Graduate School, Peking University)\**
3. SparseARFM-SI: Rotary Point Cloud Place Recognition Based on Multi-Resolution and

## Attention Mechanism

*Xiaohang Liu (Peking University); Ruonan Zhang (Peking University, shenzhen graduate school); Jie Wang (Dalian University of Technology); Ge Li (SECE, Shenzhen Graduate School, Peking University)\**

## 4. Dynamic Mesh Commonality Modeling Using The Cuboidal Partitioning

*Ashek Ahmmed (CSU)\*; Manoranjan Paul (Charles Sturt University, Australia); Manzur Murshed (Federation University Australia); Mark Pickering (UNSW Canberra)*

## 5. 3D Tensor Display for Non-Lambertian Content

*Armand Losfeld (Université Libre de Bruxelles)\*; Eline Soetens (Université Libre de Bruxelles); Laurie Van Bogaert (Univeristé Libre de Bruxelles); Sarah Fachada (Université Libre de Bruxelles); Daniele Bonatto (Université Libre de Bruxelles); Gauthier Lafruit (Université Libre de Bruxelles); Mehrdad Teratani (Université Libre de Bruxelles)*

## 6. Spike Signal Reconstruction Based on Inter-Spike Similarity

*Yiyang Zhang (Peking University)\*; Ruiqin Xiong (Peking University); Tiejun Huang (Peking University)*

## 7. Low Light RAW Image Enhancement Using Paired Fast Fourier Convolution and Transformer

*Yichi Zhang (Hangzhou Normal university); Hengyu Liu (Hangzhou Normal University); Dandan Ding (Hangzhou Normal University)\*; Zhan Ma (Nanjing University)*

## 8. Recurrent Multi-connection Fusion Network for Single Image Deraining

*Yuetong Liu (Shandong University of Finance and Economics)\*; Rui Zhang (Shandong University of Finance and Economics); Yunfeng Zhang*

*(Shandong University of Finance and Economics);  
Yang Ning (Shandong Jianzhu University);  
Xunxiang Yao (Shandong University of Finance and  
Economics); Huijian Han (Shandong University of  
Finance and Economics)*

**Topic 2: Multimedia Content Analysis,  
Representation, and Understanding**

**When:** 15:10 – 16:40, Friday, Dec. 16, 2022

**Where:** Room 2

**Session Chair:** **Jinglin Xu** (University of Science and  
Technology Beijing)

1. Hierarchical Reinforcement Learning Based Video  
Semantic Coding for Segmentation  
*Guangqi Xie (University of Science & Technology of  
China); Xin Li (University of Science and  
Technology of China); Shiqi Lin (University of  
Science and Technology of China); Li Zhang  
(Bytedance Inc.); Kai Zhang (Bytedance Inc.); Yue  
Li (Bytedance Inc.); Zhibo Chen (University of  
Science and Technology of China)\**
2. CFNet: A Coarse-to-Fine Network for Few Shot  
Semantic Segmentation  
*Jiade Liu (Xidian University); Cheolkon Jung  
(Xidian University)\**
3. Robust Dynamic Background Modeling for  
Foreground Estimation  
*Qian Ning (Xidian University); Fangfang Wu  
(Xidian University)\*; Weisheng Dong (Xidian  
University); Jinjian Wu (Xidian University);  
Guangming Shi (Xidian University); Xin Li (West  
Virginia University)*
4. Mining Regional Relation from Pixel-wise  
Annotation for Scene Parsing  
*Zichen Song (University of Electronic Science and  
Technology of China)\*; Hongliang Li (University of  
Electronic Science and Technology of China);*

*Heqian Qiu (University of Electronic Science and Technology of China); Xiaoliang Zhang (University of Electronic Science and Technology of China)*

5. ENDE-GNN: An Encoder-decoder GNN Framework for Sketch Semantic Segmentation

*Yixiao Zheng (Beijing University of Posts and Telecommunications); Jiyang Xie (Beijing University of Posts and Telecommunications); Aneeshan Sain (University of Surrey); Zhanyu Ma (Beijing University of Posts and Telecommunications)\*; Yi-Zhe Song (University of Surrey); Jun Guo (Beijing University of Posts and Telecommunications)*

6. Learning from the NN-based Compressed Domain with Deep Feature Reconstruction Loss

*LiuHong Chen (Fudan University)\*; Heming Sun (Waseda University, Japan); Xiaoyang Zeng (Fudan University); Yibo Fan (Fudan University)*

## Demo Session

**When:** 17:15 – 17:50, Tuesday, Dec. 13, 2022

**Where:** Room 1

**Session Chair:** **Li Li** (University of Science and Technology of China)

1. FPX-NVC: An FPGA-Accelerated P-frame Based Neural Video Coding System

*Chuanmin Jia (Peking University)\*; Xinyu Hang (Peking University); Wenbo Liu (Beijing Boya Realscene Technology Co., Ltd); Shanshe Wang (Peking University); Siwei Ma (Peking University, China)*

2. Real-time Learned Image Codec on FPGA

*Heming Sun (Waseda University, Japan)\*; Qingyang Yi (The University of Tokyo); Fangzheng Lin (Waseda University); Lu Yu (Zhejiang University); Jiro Katto (Waseda University); Masahiro Fujita (The University of Tokyo)*

3. SalCrop: Spatio-temporal Saliency Based Video Cropping

*Kao Zhang (Wuhan University)\*; Yan Shang (Tencent); Songnan Li (Tencent); Shan Liu (Tencent America); Zhenzhong Chen (WHU)*

4. Intelligent Reflection Elimination Imaging Device based on Polarizer

*Xinru Chen (East China Normal University); Hang Liu (East China Normal University); Menghan Hu (East China Normal University)\*; Lejing Zhang (East China Normal University); Yunmian Li (Ruian Dawan Polaroid Material Technology CO., LTD.)*

5. Portable Eye Movement Feature Collection Device for Children with Autism

*Xinding Xia (East China Normal University); Menghan Hu (East China Normal University)\*; Xiaojuan Xue (East China Normal University);*



*Qiaoyun Liu (East China Normal University); Jian Zhang (East China Normal University); Guangtao Zhai (Shanghai Jiao Tong University)*

6. Quality-Constant Per-Shot Encoding by Two-Pass Learning-based Rate Factor Prediction  
*Chunlei Cai (Bilibili Inc.)\*; Yi Wang (Bilibili); Xiaobo Li (Bilibili Inc.); tianxiao ye (bilibili inc)*

## **Challenge Session**

### **Topic 1: Tire pattern image classification based on lightweight network**

**When:** 17:00 – 18:00, Wednesday, Dec. 14, 2022

**Where:** Room 1

**Challenge Chair :** Ying Liu (Xi'an University of Posts and Telecommunications)

#### **Schedule:**

17:00 - 17:10 Challenge summary, announcing winning teams

Presenter: Ying Liu (Xi'an University of Posts and Telecommunications)

17:10 - 17:20 Presentation from Winning Team 1  
Presenter TBD

17:20 - 17:30 Presentation from Winning Team 2  
Presenter TBD

17:30 - 17:40 Presentation from Winning Team 3  
Presenter TBD

17:40 - 17:50 Presentation from Winning Team 4  
Presenter TBD

17:50 - 18:00 Conclusion and taking photos

### **Topic 2: Practical end-to-end image compression challenge**

**When:** 17:00 – 18:00, Wednesday, Dec. 14, 2022

**Where:** Room 2

**Challenge Chair:** Li Li (University of Science and Technology of China)

#### **Schedule:**

17:00 - 17:10 First Track (Coding Performance) -  
Ranking first team  
Presenter TBD

17:10 - 17:20 First Track (Coding Performance) -  
Ranking second team  
Presenter TBD

17:20 -17:30 Second Track (Decoding Complexity) -  
Ranking first team  
Presenter TBD

17:30 - 17:40 Second Track (Decoding Complexity)  
-Ranking second team  
Presenter TBD

17:40 - 17:50 Third Track (Practical Solution) -  
Ranking first team  
Presenter TBD

17:50 - 18:00 Third Track (Practical Solution) -  
Ranking second team  
Presenter TBD