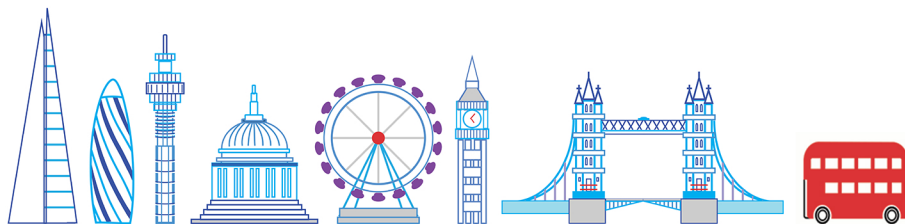# ICME 2020

July 6-10 2020, London, UK || Virtual

21st IEEE International Conference on Multimedia and Expo

Program Guide

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Schedule at a Glance [BST]

Monday, July 6, 2020

09:00	**W1:** AVS3 Video Coding Standard				
09:30					
10:00				**Tutorial:** Video Summarisation and Re-use Technologies and Tools	**Tutorial:** Deep Bayesian Modelling and Learning
10:30					
11:00		**W2:** ICT and MM Tools for Migrants Inclusion in Host societies (WIMMIH2020)	**W3:** 1st International Workshop on Interactive Multimedia Retrieval (IMuR)		
11:30					
12:00					
12:30					
13:00	**Break; Video Tour of London via Zoom**				
13:30					
14:00	**W1:** AVS3 Video Coding Standard	**W4:** Tools for creating XR Media Experiences	**W5:** Multimedia Services and Technologies for Smart-Health (MUST-SH 2020)	**W6:** 3D Point Cloud Process., Analysis, Compression, and Communication	**Tutorial:** Immersive Imaging Technologies: from Capture to Display
14:30					
15:00					
15:30					
16:00					
16:30					

Also see: Social Program/Networking @ start & end of Tuesday, Wednesday, Thursday, page 9

Tuesday, July 7, 2020

09:00	**Opening**						
09:30	**Keynote I: Generative Forms of Multimedia Content by Prof. Alan Smeaton**						
10:00							
10:30		**O1:** Image/Video Acquisition & Compression I	**O2:** Image/Video Synthesis and Creation	**O3:** Visual Tracking			
11:00	**TMM Papers**						
11:30		**P1:** Multimedia Security, Privacy and Forensics	**P2:** Image/Video Acquisition & Compression II	**P3:** Cross-modal and Multi-Modal Media Analysis II	**P4:** Super-Resolution and Saliency Detection	**P5:** Multimedia Retrieval III	**Collaborative Research Projects**	**Industry and Application Papers**
12:00							
12:30							
13:00	**Break; Video Tour of London via Zoom**						
13:30	**Best Paper Awards Session**						
14:00							
14:30							
15:00							
15:30							
16:00							
16:30	**Panel 1:** Multim. Tech. Transfer in Action	**O4:** Graph Neural Network f Mm. Repres. Learn.	**O5:** Learn.-based Geom. Model. fr. Light Fields	**O6:** Neural Networks for Multimedia I	**O7:** Multimedia Retrieval I	**O8:** Image Forensics		
17:00							
17:30	**Keynote 2: A Nationally-implemented AI Solution for Covid-19 by Prof. Mihaela van der Schaar**						
18:00							

Wednesday, July 8, 2020

Time								
09:00	GC1: The CORSMAL Challenge: Multi-modal Fusion and Learning for Robotics	GC2: QA4 CAMERA - Quality Assessment for Smartphone Cameras	GC3: PAIR Compet.: Embed. Deep Learn. Object Detec. Model Compression Competition f. Traffic in Asian Countr.				GC5: Densely-sampled Light Field Reconstr.	Student Networking / Mentoring
09:30								
10:00				O9: Image/Video Enhancemt. I	O10: Emerging Multimedia Applications I	O11: Immersive Media I		
10:30								
11:00								
11:30			P6: Semantic Segmentation and Classification	P7: Multimedia for Society and Health I	P8: Object Recognition	P9: Image/Video Enhancement III	P10: Machine Learning based MM Applications & Technologies	Student Networking / Mentoring
12:00								
12:30								
13:00	Break; Video Tour of London via Zoom							
13:30	Keynote 3: User Centered AI by Prof. Susanne Boll							
14:00								
14:30	Panel 2: Fut. Trends AI: Research Chal. i. Next Decade	GC4: Encoding in the Dark	O12: Smart Camera	O13: Domain Adapt f. MM Sem. Understand.	O14: Immersive Media II	O15: Neural Networks for Multimedia II	O16: DL in Emerg.Multim. Applications I	O17: Multimedia Retrieval II
15:00								
15:30	Keynote 4: How the Mobile Phone Became a Camera by Dr. Peyman Milanfar							
16:00								
16:30	Women in Tech	3MT Contest						
17:00								
17:30								
18:00								

Also see: Social Program/Networking @ start & end of Tuesday, Wednesday, Thursday, page 9

Thursday, July 9, 2020

Time								
10:00		Student Networking / Mentoring						
10:30								
11:00								
11:30		Student Networking / Mentoring	Demo Session 1	Demo Session 2	Demo Session 3	Demo Session 4	P11: Cross-Modal & Multi-Modal Media Analysis I	P12: Human Analysis III
12:00								
12:30								
13:00	Break; Video Tour of London via Zoom							
13:30	MM Star Innovator Talks	Student Networking / Mentoring	O18: Recent Adv. in Immersive Imag. Tech.	O19: Human Analysis I	O20: Emerging Multimedia Applications II	O21: Multimedia for Society and Health I	O22: Multimedia Mining	O23: Deep Repres.. f. Vis. Qual. Assessm.
14:00								
14:30			P13: Multimedia quality assessment and coding	P14: Multimedia Networking and Speech	P15: Video Analysis	P16: Emerging Multimedia Applications & Techniques	P17: Image/Video Synthesis and Generation	P18: Super-resolution
15:00								
15:30								
16:00	ICME 2021		O24: Object Detection	O25: Music & Speech	O26: DL in Emerg. Multimedia Applications II	O27: Human Analysis II	O28: Action Recognition	O29: Image/Video Enhancem. II
16:30								

Friday, July 10

Time						
09:00	**W7:** **The 1st ICME Workshop on** Hyper-Realistic Multimedia for Enhanced Quality of Experience					
09:30						
10:00					**Tutorial:** Versatile Video Coding – Algorithms and Specification	
10:30						
11:00		**W8:** **The 7th IEEE Int'l Workshop on Mobile MM Computing – MMC 2020**	**W9:** **IEEE International Workshop of** Artificial Intelligence in Sports (AI-Sports)			**Tutorial:** Device Fingerprinting & its Applications in MM Forensics & Security
11:30						
12:00						
12:30						
13:00	**Awards & Closing Ceremony**					
13:30						
14:00	**W7:** **The 1st ICME Workshop on** Hyper-Realistic Multimedia for Enhanced Quality of Experience	**W8:** **The 7th IEEE Int'l Workshop on Mobile MM Computing – MMC 2020**			**W12:** Media-Rich Fake News (MedFake)	
14:30						
15:00			**W10:** **The 2nd International Workshop on Big Surveillance Data Analysis and Processing**	**W11:** Data-driven Just Noticeable Difference for Multimedia Communication		**Tutorial:** **Point Cloud Compression**
15:30						
16:00						
16:30						
17:00						
17:30						

Key

W - Workshop	🟥
GC - Grand Challenge	🟦
P - Poster Session	🟥
O - Oral Session	🟪

ICME Main Website

ICME 2020

www.2020.ieeeicme.org

In addition to via the Whova app, you can find detailed track information and schedules on our virtual platform https://2020.ieeeicme-virtual.org/

Social Program and Networking

Tuesday	Wednesday	Thursday
08:00 - 09:00	08:00 - 09:00	09:00 - 10:00
18:00 - 19:00	18:00 - 19:00	17:00 - 18:00

Welcome Message from the General Chairs

On behalf of the Organising Committee, we would like to welcome you to the 2020 IEEE International Conference on Multimedia and Expo (ICME 2020). While originally thrilled to welcome you to the wonderful city of London, in light of the global health emergency, we are instead very pleased to offer you the exciting experience of fully virtual conference for the first time in the 20-year history ICME. We sincerely hope that you stay healthy and well and that you enjoy the conference environment with minimal ecological impact.

It has been a great honour and privilege to serve as the General Chairs of this conference. Since its launch in 2000, ICME has been the flagship multimedia conference sponsored by four IEEE societies: Circuits and Systems (CAS), Communications (ComSoc), Computer (CS), and Signal Processing (SPS). It aims to promote exchange of the latest advances in multimedia technologies, systems, and applications from the research and development perspectives of the four research communities.

This year, IEEE ICME 2020 will feature 4 interesting and timely keynote talks on topics such as artificial intelligence, mobile multimedia and generation of multimedia content. The main program will benefit from 241 carefully selected contributions organized in 29 oral and 18 poster sessions. In addition, the workshop & tutorial days will see 6 tutorial sessions and 15 workshops with 113 publications. As is traditional, ICME will host a variety of side-track events including 5 Grand Challenge sessions, industry, demo, collaborative research projects and hands-on-demo sessions. The continued practice of inviting authors of selected publications from Transactions on Multimedia to present their work in a dedicated session has gained a significant attention in this year. ICME 2020 will also host 2 panels covering the topics of tech transfer and artificial intelligence. In addition, an exciting Women-in-Tech session will enable live debates about diversity and inclusivity of modern research and tech industry communities. A separate single-track session will be dedicated to all shortlisted Best Paper Award candidates. Highlighted Multimedia Star Innovator talks will be also presented and the winner will be announced.

This year, particular attention will be paid to organising a rich student program in collaboration with the sponsors. YouTube will enable research students to meet world leading researchers and established scholars in a series of one-to-one 15-minute mentoring meetings. Furthermore, in parallel to selection of the best paper, research student authors will compete for the Tencent Best Student Paper Award. PhD students are also invited to participate in a Three-Minute-Thesis (3MT) contest supported by IET, where they will be provided with an opportunity to present their dissertation work in a concise manner and to win one of 3 prizes.

The Technical Program Chairs, Shuai Wan (Northwestern Polytechnical University, China), Ce Zhu (University of Electronic Science & Technology of China), Jian Zhang (University of Technology, Sydney, Australia), Jianquan Liu (NEC Corporation, Japan), Shiwen Mao (Auburn University, USA), Wen-Huang Cheng (National Chiao Tung University, Taiwan) and Jiwen Lu (Tsinghua University, China) put amazing effort into organising an exciting program and selecting 241 papers from over 800 submissions. The Workshop Chairs, Raouf Hamzaoui (De Montfort University, UK) and Noel O'Connor (Dublin City University, Ireland) also made fantastic contributions through organising the workshop track and selecting 113 papers from more than 200 submissions.

We would also like to acknowledge other Organising Committee members. The Plenary Chairs, Mei-Ling Shyu (University of Miami, USA) and Joao Ascenso (Instituto Superior Técnico, Portugal)

coordinated an exciting keynote speech program with 4 highly reputed speakers. The Special Session Chairs, Gene Cheung (York University, Canada) and Athanasios Mouchtaris (Amazon, USA) selected 6 successful special sessions. The Tutorial Chairs, Joao Magalhaes (Universidade Nova de Lisboa, Portugal) and Pascal Frossard (Ecole Polytechnique Fédérale de Lausanne, Switzerland) organized 6 tutorials. The Panel Chairs, Nikolaos Boulgouris (Brunel University, UK) and Chia-Wen Lin (National Tsing Hua University, Taiwan) established 2 interesting panel discussions. The Grand Challenge Chairs, David Bull (University of Bristol, UK) and Patrick Le Callet (University of Nantes, France) selected 5 Grand Challenges with a number of participants. The Industry Chairs, Vanessa Testoni (Samsung, Brazil), Shenglan Huang (Hulu, China), Béatrice Pesquet (Thales, France) and Shan Liu (Tencent, USA) alongside with the Demo Chairs, Saverio Blasi (BBC, UK) and Christian Timmerer (Alpen-Adria-Universität, Austria), the Expo Chairs, Sebastiaan Van Leuven (Twitter, UK) and Balu Adsumilli (YouTube, USA), and the European Research Project Chair, Alberto Rabbachin (European Commission, Belgium) enabled active industrial representation and a rich side-track program that includes a number of sessions. The Student Program Chair, Hantao Liu (Cardiff University, UK), the Student Liaisons, Luka Murn (BBC, UK, DCU, Ireland) and Najmeh Rezaei (Queen Mary University of London, UK) and the Diversity and Inclusion Chairs, Laura Toni (University College London) and Federica Battisti (Roma Tre University, Italy) contributed by setting up an exciting program for students and debates.

The Awards Committee Chair, Maria Martini (Kingston University, UK) enabled smooth and transparent award committee processes. The Publicity Chairs, Fiona Rivera (BBC, UK), Jiaying Liu (Beijing University, China), Enrico Magli (Politecnico di Torino, Italy), Homer Chen (National Taiwan University, Taiwan) and Joern Ostermann (Leibniz Universität Hannover, Germany) provided immense help in advertising the conference. We would also like to thank the Publication Chair, Eduardo Peixoto (University de Brasilia, Brazil) for putting a great effort into coordinating the IEEE publication processes and the Finance Chair, Qianni Zhang (Queen Mary University of London, UK), for coordinating financial aspects of the conference. The Registration and Local Chairs, Tomas Piatrik (Queen Mary University of London, UK) and Charith Abhayaratne (University of Sheffield, UK), Web Chairs, Maria Silvia Ito and Maria Santamaria (Queen Mary University of London, UK) and the administration team from IEEE SPS, Nicole Allen, Samantha Walter and Caroline Johnson, significantly contributed with technical support. The conference would not have been possible without the dedication and hard work of all members of the Organising Committee as well as many volunteers.

Special thanks go to our keynote speakers, Alan Smeaton (Dublin City University, Ireland), Susanne Boll (University of Oldenburg, Germany), Peyman Milanfar (Google Research, USA) and Mihaela Van Der Schaar (University of Cambridge, UK). We greatly value their participation and look forward to their insightful vision and thoughts. Our thanks also go to all invited speakers for tutorials, panels, and workshops.

We are grateful to the strong support of the ICME Steering Committee, the four sponsoring societies and respective Technical Committees. ICME is a unique event that combines and unifies support of these four societies to deliver an extraordinary interdisciplinary conference.

We would also like to thank our industrial sponsors. Our gold sponsor, YouTube, will also support the student mentoring session series. Tencent, our bronze sponsor, will coordinate the Best Student Paper Award with a generous reward. Our special sponsors, IET and Springer will support the student 3MT event and provide all the registrants with a discount for their publications, respectively.

Finally, we would like to extend our most sincere congratulations and acknowledgement to all authors, speakers and reviewers for a job well done. We are looking forward to meeting all authors, speakers and delegates in the complete virtual setup and to learn from this new experience for the first time in ICME's 20-year history.

ICME 2020 General Chairs

- ❖ Marta Mrak, BBC R&D, UK

- ❖ Vladan Velisavljevic, University of Bedfordshire, UK

- ❖ Ebroul Izquierdo, Queen Mary University of London, UK

Welcome Message from the Technical Program Committee Chairs

On behalf of the ICME 2020 Technical Program Committee (TPC), we warmly welcome you to the first online event of ICME! This year is special for ICME since ICME 2020 will have to be re-envisioned as a fully virtual event due to the worldwide impact caused by COVID-19. However, challenges and opportunities always come together. Although we were looking forward to seeing you all in London, we believe that this virtual event will provide even more opportunities for multimedia researchers from academia and industry all over the world to participate. This has been achieved by the continued support from four IEEE societies: IEEE Signal Processing Society, IEEE Communications Society, IEEE Circuits and Systems Society, and IEEE Computer Society.

The ICME 2020 main conference will take place online July 6-10, 2020. The daily technical program will be highlighted by keynote speeches delivered by world-class scientists. The keynote talks will be merged with a comprehensive program includes sessions for Best Papers, Presentation of Journal Papers, and many more. Numerous sessions will be running in parallel, composed of accepted submissions, including six special sessions. One day before and one day after the core conference days, you will have the opportunity to attend workshops which are traditionally held in conjunction with ICME.

This year the conference main track received a high number of 834 submissions. The TPC of ICME 2020 consisted of 136 Area Chairs and 1035 reviewers from a worldwide variety of academic, industrial, government, and research organizations. All submitted papers have gone through a rigorous double-blind review process. Almost all papers have received 3 independent reviews, with 47% receiving four or more reviews.

As a result, 241 papers have been accepted, with an overall acceptance rate of 28.9%. Accepted papers with top review scores were selected for oral presentation. In particular, the oral paper sessions consist of 103 regular papers and 19 special session papers, corresponding to a 12.3% (14.6% if including special session papers) acceptance rate. Amongst a number of top-rated submissions, 12 of the very best papers have been shortlisted as best paper award candidates, while the final selection will be decided during the conference by the Awards Committee (considering both the reviews and presentation quality). Authors of a selected set of high quality ICME 2020 papers will also be invited to submit an extended version of their papers for possible publication in IEEE Transactions on Multimediam, IEEE MultiMedia, as well as IEEE Open Journal of Circuits and Systems.

In addition to the main track, ICME 2020 will host workshops and four special tracks (industry/application, grand challenges, collaborative research projects, demo). The workshops will explore emerging research topics and bridge multimedia research advances with other research areas. This year, we have the pleasure to bring to you 12 workshops: Artificial Intelligence in Sports; AVS3 Video Coding Standard; Big Surveillance Data Analysis and Processing; Hyper-Realistic Multimedia for Enhanced Quality of Experience; Interactive Multimedia Retrieval; Data-driven Just Noticeable Difference for Multimedia Communication; Mobile Multimedia Computing; Multimedia Services and Technologies for Smart-Health; 3D Point Cloud Processing, Analysis, Compression, and Communication; ICT and Multimedia Tools for Migrants Inclusion in Host societies; Tools for Creating XR Media Experiences; and Media-Rich Fake News. The workshops attracted 141 paper submissions, 83 of which were accepted for publication. All papers went through a rigorous review process, with 95.04% of them receiving at least three reviews.

For a flagship multimedia conference like ICME, a high-quality technical program would not be possible without countless hours of hard work from many researchers in the community. We would like to thank all Area TPC chairs, TPC members, and external reviewers for their outstanding dedication and hard work. We will recognise those colleagues who made the most valuable contributions with special awards of Outstanding Area Chairs and Outstanding Reviewers.

We would like to thank the conference general chairs, Marta Mrak, Ebroul Izquierdo, and Vladan Velisavljevic as well as the ICME Steering Committee for their patience and guidance. Many thanks also to all the members of the Organizing Committee for their full support in preparation of the conference. Finally, we would like to thank all the authors for their continuing support by submitting their original contributions to this conference. We look forward to meeting you in the virtual event, and hope you enjoy the special experience of online technical program.

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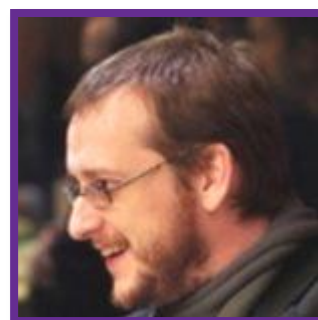
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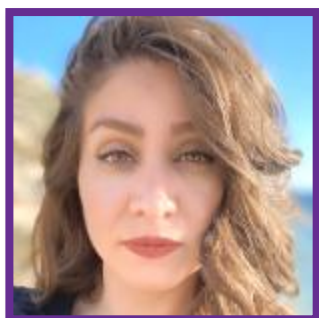
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Keynote Speeches

Tuesday, July 7, 2020

Generative Forms of Multimedia Content

Time: 9:30 - 10:30
Chair: Prof. Ebroul Izquierdo, Queen Mary University of London, UK
Speaker: Prof. Alan Smeaton, Professor of Computing, Dublin City University, Ireland

Abstract

Multimedia analysis has recently made spectacular improvements in both quality and in sophistication. Over the last half-decade we have seen extreme progress in tasks like image and video tagging, object detection and activity recognition, generating descriptive captions and more. Some of these have been deployed and are in widespread use in our smartphones and on our social media platforms. We have also seen recent research work, including our own, on computing more abstract features of multimedia, such as person-counting from CCTV, computing visual salience, estimating aesthetics of images and videos, and computing video memorability. The common methodology used across most of these applications is of course machine learning, in all its forms, from convolutional neural networks to simple regression and support vector machines. Much of the research in our field is about wrestling with machine learning to optimise its performance in multimedia analysis tasks and this recent run of extreme progress does not look like ending anytime soon, though it will reach its high water mark. When it does reach the point at which it cannot get any better, what then? Generative machine learning (ML) is a recent form of media analysis which turns the conventional approach on its head and its methodology is to train a model and then generate new data. Example applications of generative ML deoldify which colourises black and white images and video clips, and Generative Adversarial Networks (GANs) which can generate DNA sequences, 3D models of replacement teeth, impressionist paintings, and of course video clips, some known as deepfakes. Putting aside the more nefarious applications of deepfakes, what is the potential for generative forms of multimedia ? In the short to medium term we can speculate that it would include things like movie augmentation but it how far can it go and could it replicate human creativity ? In this talk I will introduce some of the recent forms of generative multimedia and discuss how far I believe we could go with this exciting new technology.

Biography

Alan Smeaton is Professor of Computing at Dublin City University where he has previously been Head of School and Executive Dean of Faculty. His early research interests covered the application of natural language processing to information seeking tasks and this evolved into the analysis and indexing of visual media (image and video) to support user tasks such as video searching, browsing and summarisation. Currently Alan's research is around technology to support people in information seeking tasks and using this to compliment the frailties of our own human memory. Alan has a particular focus on lifelogging, automatically recording information about yourself, your everyday life and the recording is done by yourself, and for your own personal use. In 2001 Alan was a co-founder of TRECvid, the largest collaborative benchmarking activity in content-based

tasks on digital video,and TRECVid has continued annually since then with over 2,000 researchers having contributed overall. Alan is a member of the Royal Irish Academy and an Academy Gold Medallist in Engineering Science, and award given only once every three years as "testament to a lifetime of passionate commitment to the highest standards in scholarship". He is a Fellow of the IEEE and the current Chair of ACM SIGMM (Special Interest Group in Multimedia).

Tuesday, July 7, 2020

A Nationally-implemented AI Solution for Covid-19: Addressing Capacity Planning, Risk Assessment, Treatment Effects and Outcomes

Time: 17:30 – 18:30

Chair: Dr. Marta Mrak, BBC - British Broadcasting Company, R&D Department, UK

Speaker: Prof. Mihaela van der Schaar, John Humphrey Plummer Professor, University of Cambridge, UK, and Chancellor's Professor, UCLA, US

Abstract

Medicine stands apart from other areas where AI can be applied. While we have seen advances in other fields with lots of data, it is not the volume of data that makes medicine so hard, it is the challenges arising from extracting actionable information from the complexity of the data. It is these challenges that make medicine the most exciting area for anyone who is really interested in the frontiers of machine learning – giving us real-world problems where the solutions are ones that are societally important and which potentially impact on us all. Think Covid 19! In this talk I will show how AI and machine learning are transforming medicine and how medicine is driving new advances in machine learning, including new methodologies in automated machine learning, interpretable and explainable machine learning, dynamic forecasting, and causal inference. I will also discuss our experiences in implementing such AI solutions nationally, in the UK, in order to fight the current Covid 19 pandemic as well as how they can be adapted for international use.

Biography

Professor van der Schaar is John Humphrey Plummer Professor of Machine Learning, Artificial Intelligence and Medicine at the University of Cambridge and a Turing Faculty Fellow at The Alan Turing Institute in London, where she leads the effort on data science and machine learning for personalized medicine. She is also a Chancellor's Professor at UCLA. She was elected IEEE Fellow in 2009. She has received numerous awards, including the Oon Prize on Preventative Medicine from the University of Cambridge, an NSF Career Award, 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. She holds 35 granted USA patents. In 2019, she was identified by National Endowment for Science, Technology and the Arts as the female researcher based in the UK with the most publications in the field of AI. She was also elected as a 2019 "Star in Computer Networking and Communications". Her research expertise spans signal and image processing, communication networks, network science, multimedia, game theory, distributed systems and machine learning. Her current research focus is on machine learning and AI for medicine. For more details, see her website: http://www.vanderschaar-lab.com/.

Wednesday, July 8, 2020

User Centered AI

Time: 13:30 – 14:30
Chair: Shuai Wan, Northwestern Polytechnical University, China
Speaker: Prof. Susanne Boll, Media Informatics & Multimedia Systems, University of Oldenburg, and Institut for Information Technology Germany

Abstract

The new "wave of AI", more specifically machine learning and deep learning is currently revolutionizing applications in many domains. One of the early and impressive examples is of course the big leap we see in content analysis of images and image understanding. Machine learning and deep learning techniques are offering their power and potential in many domains from automated driving to health care, from industry 4.0 to regenerative energy. When we talk about AI the term Explainable AI is getting into focus as an important and relevant aspect of AI. A „black box" AI should be able to be understandable and readably by a human, initially such that the results of the AI can be understood by human experts.

Humans that are using and affected by AI are of course not experts in AI but everyday individuals in their work life and their personal private daily life. In a life in which AI methods and approaches will be influencing day-to-day actions, our decision-making powers, our control and our freedom, we need to design AI driven systems that are oriented along user, their needs and requirements. We must put them into the position to accept, to understand, to control, and potentially object to AI. We need to make AI first and foremost beneficial to all users. This keynote will look into the challenges of user-centered AI, what this means in different fields of applications and where we need new methods and tools to and put the user in lead in the decades of AI to come.

Biography

Prof. Dr. Susanne Boll is Professor of Media Informatics and Multimedia Systems in the Department of Computing Science at the University of Oldenburg, in Germany. She serves on the board of the OFFIS–Institute for Information Technology, in Oldenburg. Prof. Dr. Boll earned a doctorate with distinction from the Technical University of Vienna, Austria. She received her Diploma in Computer Science with distinction in from the Technical University of Darmstadt, Germany in 1996. Her research field lies at the intersection of human computer interaction and interactive multimedia in which she has an excellent scientific track record. Her scientific results have been published in competitive peer-reviewed international conferences, such as Multimedia, CHI, and ICME as well as internationally recognized journals. She is a highly active member of the scientific community; she has been a reviewer for many international conference and journals and has co-organized and co-chaired many scientific events in the field. Her research passion is developing interactive technology for people, joining novel innovative technology development with user needs and social acceptance in the center of her research. She is developing novel interaction technology that is shaped toward as respectful and beneficial cooperation of human and technology in a future more and more automated world. Her scientific research projects have a strong connection to industry partners and application partners and addresses highly relevant challenges in the applications field of automation in transportation systems, in interactive health care technologies, and industry 4.0.

Wednesday, July 8, 2020

How the Mobile Phone Became a Camera

Time: 15:30 – 16:30
Chair: Vladan Velisavljevic, University of Bedfordshire, UK
Speaker: Dr. Peyman Milanfar, Principal Scientist and Director,
            Google Research, US

Abstract

The first camera phone was sold in 2000, when taking pictures with your phone was an oddity, and sharing pictures online was unheard-of. Today, barely twenty years later, the smartphone is more camera than phone. How did this happen? This transformation was enabled by advances in computational photography — the science and engineering of making great images from small form factor, mobile cameras. Modern algorithmic and computing advances, including machine learning, have changed the rules of photography, bringing to it new modes of capture, post-processing, storage, and sharing. In this talk, I'll give a brief history of digital and computational photography and describe some of the key recent advances of this technology, including burst photography and super-resolution.

Biography

Peyman Milanfar is a Principal Scientist / Director at Google Research, where he leads the Computational Imaging team. Prior to this, he was a Professor of Electrical Engineering at UC Santa Cruz from 1999-2014. He was Associate Dean for Research at the School of Engineering from 2010-12. From 2012-2014 he was on leave at Google-x, where he helped develop the imaging pipeline for Google Glass. Most recently, Peyman's team at Google developed the digital zoom pipeline for the Pixel phones, which includes the multi-frame super-resolution (Super Res Zoom) pipeline, and the RAISR upscaling algorithm. In addition, the Night Sight mode on Pixel 3 uses our Super Res Zoom technology to merge images (whether you zoom or not) for vivid shots in low light, including astrophotography. Peyman received his undergraduate education in electrical engineering and mathematics from the University of California, Berkeley, and the MS and PhD degrees in electrical engineering from the Massachusetts Institute of Technology. He founded MotionDSP, which was acquired by Cubic Inc. (NYSE:CUB). Peyman has been keynote speaker at numerous technical conferences including Picture Coding Symposium (PCS), SIAM Imaging Sciences, SPIE, and the International Conference on Multimedia (ICME). Along with his students, he has won several best paper awards from the IEEE Signal Processing Society. He is a Distinguished Lecturer of the IEEE Signal Processing Society, and a Fellow of the IEEE "for contributions to inverse problems and super-resolution in imaging."

Panel 1 - Tech Transfer

Tuesday, July 7, 2020

Multimedia Technology Transfer in Action: How to Bridge the Gap between Research Outcomes and Real Product

Time: 16:30 – 17:30
Moderator: Paola Hobson, Managing Director, InSync Technology Ltd
Panellists: Natasha Allden, Multiply Space – technology transfer for space applications
            Dr. Timor Kadir, Optellum
            Shan Liu, Tencent
            Philip Scofield, Crystal Vision

Objectives

Around the world, academic institutions are engaging in ever more future looking projects. Much of this research is both innovative and application focused, yet may take many years to get to market, if at all. In this panel, we hear from industrialists in small and medium sized enterprises who've successfully bridged the gap between academic research outcomes and product development. What's the secret of their success, and how feasibly can their technology transfer models be replicated? Join our four experts for an interactive session looking at how to overcome the barriers in getting from idea to market, and what makes a successful technology partnership.

Moderator

Paola Hobson is Managing Director of InSync Technology Ltd, an employee-owned company specialising in signal processing hardware and software for the professional broadcast and media industries. InSync has more than 17 years experience of design, development and production of world-leading motion compensated standards converters. In her career of more than 30 years working in advanced technology companies, Paola has significant experience of new product development and market introduction in fields such as HD and UHD television, mobile image communication, content personalisation, and video processing. She holds BSc, PhD and MBA degrees, and is the author of numerous granted patents.

Panelists

Natasha Allden founded MULTIPLY in 2015 to unleash the potential value of technology and people. Maximising growth and revenue generation through new markets, models and applications. Having built her first company at the age of 21 she went onto pursue a career in digital strategy and proposition development for FTSE100 companies in energy, finance and insurance before moving onto advanced engineering programmes in space, automotive and energy.

She has an international track record leading commercial strategies, marketing and sales, development programmes and partnerships.

Dr. Timor Kadir (CTO) leads the product strategy and science at Optellum, and is the NCIMI Project Lead. After gaining an MEng from Surrey University and 2 years as a scientist at Motorola Inc., he left to study for a DPhil at Oxford supervised by Sir Mike Brady. He joined CTI Mirada Solutions as a Research Scientist and IP Manager and stayed through the Siemens acquisition working on many clinical oncology software systems. In 2008 he joined the newly re-established Mirada Medical (MBO from Siemens) as CSTO, where he was responsible for the product strategy and definition; managed European sales; and released 6 innovative and successful medical imaging based products in radiology, radiation oncology, nuclear medicine and interventional radiology. In 2013 he applied for and was awarded as the Principal Investigator a £1M InnovateUK grant to investigate machine learning in managing patients with indeterminate lung nodules. The success of this project led to the establishment of Optellum. He holds a visiting position at Oxford with Prof. Andrew Zisserman FRS, at one of world's top computer vision labs. He has published over 70 peer-reviewed papers, and filed over 30 patents.

Shan Liu is a Tencent Distinguished Scientist and General Manager of Tencent Media Lab. She was formerly Director of Multimedia Technology Division at MediaTek USA. She was also formerly with MERL, Sony and IBM. Dr. Liu has been actively contributing to international standards since the last decade. She has numerous proposed technologies adopted into various standards such as HEVC, VVC, OMAF, MPEG-DASH, PCC and served co-Editor of HEVC/H.265 v4 (a.k.a. HEVC SCC) and the emerging VVC. At the same time, technologies and products developed by Dr. Liu and her team are serving multiple millions of users daily. Dr. Liu holds more than 100 granted US and global patents and authored more than 70 peer reviewed technical articles. She was in the committee of Industrial Relationship of IEEE Signal Processing Society (2014-2015) and serves as associate editor for IEEE Transactions on Circuits and Systems for Video Technology (2018-) and vice chair of IEEE1857 standard WG (2019-). She also served the VP of Industrial Relations and Development of Asia-Pacific Signal and Information Processing Association (2016-2017) and was named APSIPA Industrial Distinguished Leader in 2018. Dr. Liu obtained her B.Eng. degree in Electronics Engineering from Tsinghua University, M.S. and Ph.D. degrees in Electrical Engineering from University of Southern California.

Philip Scofield is Managing Director of Crystal Vision. He has an engineering background and spent his early career designing television studio equipment. He founded Crystal Vision more than 20 years ago to manufacture products that provide a convenient way to work with a mixture of different broadcast technologies. He has led Crystal Vision through a number of changes in technology and now employs staff with the skills to manage a modern, software based development team. He has been responsible for many new products being specified, developed and marketed within the media industry and has developed partnerships with other suppliers and with customer organisations.

Panel 2 - AI Trends

Wednesday, July 8, 2020

Future Trends in Artificial Intelligence: Research Challenges in the Next Decade and Beyond

Time: 14:30 – 15:30
Moderator: Nikolaos Boulgouris, Brunel University London
Panellists: Kjersti Engan, Stavanger University
             Lina J. Karam, Lebanese American University
             Tao Mai, JD.COM
             Mark Plumbley, University of Surrey

Objectives

The popularity of AI technologies over the past decade has grown to an extent that any technological solution that does not involve an AI component is seen as technologically primitive or plainly inefficient. The panel, comprised of researchers who work on various AI applications, will reflect on current research advances in AI and discuss their technological and societal impact. Panel members will then attempt to envision the research challenges that will define and drive future developments in several of the application domains of AI, including healthcare, education, and entertainment.

Moderator

Nikolaos Boulgouris is an academic with the Department of Electronic and Computer Engineering of Brunel University London. His research is in the areas of image/signal processing, biometrics, and intelligent systems. He has published over 100 peer-reviewed journal and conference articles in his areas of interest. Nikolaos served as Technical Program Chair for the 2018 edition of the IEEE International Conference on Image Processing (ICIP). He was co-editor of the book Biometrics: Theory, Methods, and Applications. He currently serves as Senior Area Editor for the IEEE Transactions on Image Processing and in the past he held several other editorial and guest editorial roles. He is a senior member of the IEEE and an elected member of the IEEE Multimedia Signal Processing Technical Committee (MMSP – TC).

Panelists

Kjersti Engan is a full professor at the Electrical Engineering and Computer Science department at the University of Stavanger (UiS), Norway. She received the BE degree in electrical engineering from Bergen University College in 1994 and the M.Sc. and Ph.D degrees in 1996 and 2000 respectively from UiS. She is a co-leader of the Biomedical data analysis lab – BMDLab – at UiS (www.ux.uis.no/bmdlab). Her research interests are in signal and image

processing and machine learning with emphasis on medical applications and in dictionary learning for sparse signal and image representation. Past and current projects in collaboration with local and international hospitals and partners include analysis, classification and segmentation in Cardiac MR on infarct patients, brain MRI on dementia patients, CT Perfusion images from stroke patients and on histopathological images for different cancer types. She is also active in projects on cardiac arrest and newborn survival, contributing with analysis and classification on fetal heart rate signals, ECG and ventilation signals and on video analysis for activity detection during resuscitation. Kjersti is a senior member of IEEE, and a board member of NOBIM (Norwegian Image and Pattern Recognition Society). She has served as Associate editor and Senior Area editor for IEEE Signal Processing Letters. She is currently a member of IEEE Image, Video, and Multidimensional Signal Processing Technical Committee (IVMSP), and an associate editor for SIAM Journal on Imaging Sciences (SIIMS).

Dr. Lina J. Karam is the Dean of the School of Engineering and Professor of Electrical and Computer Engineering at the Lebanese American University. She is an IEEE Fellow and Editor-In-Chief of the IEEE Journal on Selected Topics in Signal Processing (IEEE JSTSP). She is also an Emerita Professor of Electrical and Computer Engineering at Arizona State University. Dr. Karam was awarded a U.S. National Science Foundation CAREER Award, a NASA Technical Innovation Award, IEEE Region 6 Award, IEEE SPS Best Paper Award, Intel Outstanding Researcher Award, and IEEE Phoenix Section Outstanding Faculty Award. Dr. Karam's industrial experience includes video compression R&D at AT&T Bell Labs, multidimensional data processing and visualization at Schlumberger, and collaborations on computer vision, machine learning, image/video processing, compression, and transmission projects with various industries. She served as General Chair of IEEE ICIP 2016 and as General Co-Chair of IEEE ICME 2019. She helped initiate the World's First Visual Innovation Award that was presented for the first time at IEEE ICIP 2016 and more recently the World's First Multimedia Star Innovator Award that was presented at IEEE ICME 2019. Dr. Karam has over 220 technical publications and she is an inventor on 7 issued US patents. She served on the IEEE Publication Services and Products Board (PSPB) Strategic Planning Committee, IEEE SPS Board of Governors, IEEE CAS Fellow Evaluation Committee, and the IEEE SPS Conference Board. In addition to serving as EiC of IEEE JSTSP, Dr. Karam is currently serving on the IEEE TechRxiv Advisory Board, IEEE Access Journal Editorial Board, IEEE SPS Awards and Publications Boards, IEEE SPS IVMSP TC, and IEEE CAS DSP TC.

Tao Mei is a Technical Vice President with JD.COM and the Deputy Managing Director of JD AI Research. His team is focusing on the research, development, innovation and commercialization of computer vision and multimedia technologies, with a broad range of applications in retail, logistics, finance, cloud, and new media. He also led the effort on machine learning platform. Prior to joining JD.COM in 2018, he was a Senior Research Manager with Microsoft Research Asia in Beijing, China, where he has shipped over 20 inventions and technologies to Microsoft products and services. Tao has authored or co-authored over 200 publications (with 12 best paper awards) in journals and conferences, and holds over 50 US and international patents. He was elected as a Fellow of IEEE, a Fellow of IAPR, a Distinguished Scientist of ACM, and a Distinguished Industry Speaker of IEEE Signal Processing Society, for his contributions to large-scale multimedia analysis and applications.

Alan Smeaton is Professor of Computing at Dublin City University where he has previously been Head of School and Executive Dean of Faculty. His early research interests covered the application of natural language processing to information seeking tasks and this evolved into the analysis and indexing of visual media (image and video) to support user tasks such as video searching, browsing and summarisation. Currently Alan's research is around technology to support people in information seeking tasks and using this to compliment the frailties of our own human memory. Alan has a particular focus on lifelogging, automatically recording information about yourself, your everyday life and the recording is done by yourself, and for your own personal use. In 2001 Alan was a co-founder of TRECvid, the largest collaborative benchmarking activity in content-based tasks on digital video,and TRECVid has continued annually since then with over 2,000 researchers having contributed overall. Alan is a member of the Royal Irish Academy and an Academy Gold Medallist in Engineering Science, and award given only once every three years as "testament to a lifetime of passionate commitment to the highest standards in scholarship". He is a Fellow of the IEEE and the current Chair of ACM SIGMM (Special Interest Group in Multimedia).

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Multimedia Star Innovators

Thursday, July 9, 2020

Time: 13:30 – 16:00
Chair: Maria Martini (Kingston University, UK)

Overview

The Multimedia Star Innovator Award was created to recognize pioneers of transformative technologies and business models in areas within the technical scope of the IEEE ICME conference series. The Award showcases innovations that have had great impact on human experiences or are anticipated to do so in the near future. To reflect widespread appreciation by the community, the winner is selected through voting by registered attendees of the conference, from among finalists selected by an Award Board.

Scope

The Multimedia Star Innovator Award is open to individuals and teams (with up to four members) responsible for business and technology innovations in areas including but not limited to the following:

- Artificial Intelligence for multimedia
- Multimedia for healthcare and society
- Multimedia and vision
- Multimedia and language
- Speech/Audio/Language/Document/Image/Video/Haptic/Radar/Lidar/Sonar/Other   data processing and understanding
- Multimedia and new sensor signal processing
- Multimedia analytics, search and recommendation
- Social and cloud-based multimedia
- 3D multimedia and AR/VR
- Multimedia quality assessment and metrics
- Multi-modal media computing and human-machine interaction
- Multimedia coding, communications, networking and mobility
- Multimedia storage, retrieval, and authentication
- Multimedia security, privacy and forensics
- Multimedia software, hardware and application systems
- Multimedia standards
- Multimedia user experience innovations
- Business model innovations related to multimedia technologies

The award nominations are limited to individuals and teams who are mainly affiliated with industry. Please check the ICME 2020 website for schedule updates and also see overleaf.

Schedule	
13:30	Introduction of the Award and of the speakers (chair: Maria Martini)
13:40	Xiaodong He presentation + Q&A
14:10	Maja Pantic presentation + Q&A
14:40	Faith Porikli presentation + Q&A
15:10	Aljosha Smolic presentation + Q&A
15:40	Wrap-up and voting (via app)

Award Board (Chair: Maria Martini)

- Paola Hobson, Managing Director Insync Technology, UK
- Kevin Jou, Corporate Sr. Vice President & CTO Mediatek, Taiwan
- Peyman Milanfar, Principal Scientist / Director, Google, US
- Pieter Mosterman, Chief Research Scientist, Mathworks, US
- Alan Smeaton, Prof Comp Science and Director of The Insight Centre for Data Analytics, Dublin City Universtiy, Ireland
- Thomas Stockhammer, Director Technical Standards, Qualcomm, US
- Yong Rui, Chief Technology Officer and Senior Vice President, Lenovo, China
- Anthony Vetro, Vice President & Director, Mitsubishi Electric Research Lab (MERL), US
- Lina Karam, Dean, School of Enigeneering, Lebanese American University, Lebanon

Finalists

Xiaodong He
Deputy Managing Director of JD AI Research, Washington, US

Maja Pantic
AI Scientific Research Lead in Facebook London and Professor at Imperial College London, UK

Fatih Porikli
Vice President of San Diego Device Hardware Competency Center, Futurewei, San Diego and Professor Australian National University

Aljosha Smolic
Co-founder, Volograms and SFI Research Professor of Creative Technologies at Trinity College Dublin, Ireland

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ICME 2020 Papers and Demos

ICME 2020 Best Paper

Tuesday, July 7, 2020

Best Paper Award Session

Time: 13:30 – 16:30
Chair: Shuai Wan (Northwestern Polytechnical University, China)
             Maria Martini (Kingston University, UK)

Paper
Voice-Indistinguishability: Protecting Voiceprint in Privacy-Preserving Speech Data Release
Yaowei Han (Kyoto University); Sheng Li (National Institute of Information & Communications Technology (NICT)); Yang Cao (Kyoto University); Qiang Ma (Kyoto University); Masatoshi Yoshikawa (Kyoto University)
Normal-to-Lombard Speech Conversion by LSTM Network and BGMM for Intelligibility Enhancement of Telephone Speech
Gang Li (Wuhan University); Xiaochen Wang (Wuhan University); Ruimin Hu (Wuhan University); Huyin Zhang (Wuhan University); Shanfa Ke (Wuhan University)
VBLFI: Visualization-Based Blind Light Field Image Quality Assessment
Jianjun Xiang (Ningbo University); Mei Yu (Ningbo University); Hua Chen (Ningbo University); Haiyong Xu (Ningbo University); Yang Song (Ningbo University); Gangyi Jiang (Ningbo University)
Deep Image Quality Assessment Driven Single Image Deblurring
Ang Li (Fudan University); Jichun Li (Fudan University); Qing Lin (Fudan University); Chenxi Ma (Fudan University); Bo Yan (Fudan University)
3D Dynamic Point Cloud Inpainting Via Temporal Consistency on Graphs
Zeqing Fu (Wangxuan Institute of Computer Technology, Beijing University); Wei Hu (Beijing University); Zongming Guo (Beijing University)
Towards Coding for Human and Machine Vision: A Scalable Image Coding Approach
Yueyu Hu (Beijing University); Shuai Yang (Beijing University); Wenhan Yang (Beijing University); Lingyu Duan (Beijing University); Jiaying Liu (Beijing University)
Reconciliation of Group Sparsity and Low-rank models for Image Restoration
Zhiyuan Zha (Nanyang Technological University); Bihan Wen (Nanyang Technological University); Xin Yuan (Nokia Bell Labs); Jiantao Zhou (University of Macau); Ce Zhu (University of Electronic Science & Technology of China)*
Interactive Training and Architecture for Deep Object Selection
Marco Forte (Trinity College Dublin); Brian Price (Adobe); Scott Cohen (Adobe Research); Ning Xu (Adobe Research); Francois Pitie (Trinity College Dublin)

Paper
FIANET: Video Object Detection via Joint Feature-Level and Instance-Level Aggregation
Zhengshuai Wang (Tsinghua University); Yali Li (Tsinghua University); Shengjin Wang (Tsinghua University)
SPANet: Spatial Pyramid Attention Network for Enhanced Image Recognition
Jingda Guo (University of North Texas); Xu Ma (University of North Texas); Andrew Sansom (University of North Texas); Mara McGuire (Texas A&M University - Corpus Christi); Andrew Kalaani (Georgia Southern University); Qi Chen (University of North Texas); Sihai Tang (University of North Texas); Qing Yang (University of North Texas); Song Fu (University of North Texas)
Light Field Image Coding using Dual Discriminator Generative Adversarial Network and VVC Temporal Scalability
Nader Bakir (INSA de Rennes, France); Wassim Hamidouche (INSA Rennes); Sid Ahmed FEZZA (National Institute of Telecommunications and ICT); Khouloud Samrouth (Lebanese University); Prof. Olivier Deforges (IETR, Rennes)
Learned Variable-Rate Image Compression with Residual Divisive Normalization
Mohammad Akbari (Simon Fraser University); Jie Liang (Simon Fraser University); Jingning Han (Google Inc.); Chengjie Tu (Tencent Technologies)

Oral Sessions

O1: Tuesday, July 7, 2020

O1: Image/Video Acquisition and Compression I

Time: 10:30 – 11:30
Chair: Mathias Wien (RWTH Aachen University)

An Emerging Coding Paradigm VCM: A Scalable Coding Approach Beyond Feature and Signal

Sifeng Xia (Beijing University); Kunchangtai Liang (Beijing University); Wenhan Yang (Beijing University); Lingyu Duan (Beijing University); Jiaying Liu (Beijing University)

Decoder-Side Intra Mode Derivation for Next Generation Video Coding

Mohsen Abdoli (Ateme); Thomas Guionnet (Ateme); Mikael Raulet (Ateme); Gosala Kulupana (BBC); Saverio Blasi (BBC)

Towards perceptually-optimized compression of User Generated Content (UGC): Prediction of UGC Rate-Distortion Category

Suiyi Ling (University of Nantes); Yoann Baveye (capacités); Patrick Le Callet (Universite de Nantes, France); Jim Skinner (Facebook); Ioannis Katsavounidis (Facebook)

2sER-VGSR-Net: A two-stage enhancement reconstruction based on video group sparse representation network for compressed video sensing

Yunyi Xuan (South China University of Technology); Chunling Yang (South China University of Technology)

O2: Tuesday, July 7, 2020

O2: Image/Video Synthesis and Creation

Time: 10:30 – 11:30
Chair: Chee Seng Chan (University of Malaya)

Fine-Grained Expression Manipulation via Structured Latent Space

Junshu Tang (Shanghai Jiao Tong University); Zhiwen Shao (Shanghai Jiao Tong University); Lizhuang Ma (Shanghai Jiao Tong University)

A Multi-Player Minimax Game for Generative Adversarial Networks

Ying Jin (Tsinghua University); Yunbo Wang (Tsinghua University); Mingsheng Long (Tsinghua University); Jianmin Wang ("Tsinghua University, China"); Philip S Yu (UIC); Jiaguang Sun (Tsinghua University)

Region-Adaptive Texture Enhancement for Detailed Person Image Synthesis

Lingbo Yang (Beijing University); Pan Wang (Alibaba Group); xinfeng zhang (University of Chinese Academy of Sciences); Shanshe Wang (Beijing University); Zhanning Gao (Alibaba Group); Peiran Ren (Alibaba); Xuansong Xie (Alibaba); Siwei Ma (Beijing University, China); Wen Gao (PKU)

MatchingGAN: Matching-based Few-shot Image Generation

Yan Hong (Shanghai Jiao Tong University); Li Niu (Shanghai Jiao Tong University); Jianfu Zhang (Shanghai Jiao Tong University); Liqing Zhang (Shanghai Jiao Tong University)

O3: Tuesday, July 7, 2020

O3: Visual Tracking

Time: 10:30 – 11:30
Chair: Junlin Hu (Beijing University of Chemical Technology)

Local-Variance-based Attention for Visual Tracking

Changlun Guo (Tianjin University of Technology); Wen Xianbin (Tianjin University of Technology); Yuan Liming (Tianjin University of Technology); Haixia Xu (Tianjin University of Technology)

High-Speed and Accurate Scale Estimation for Visual Tracking with Gaussian Process Regression

Linyu Zheng (Institute of Automation, Chinese Academy of Sciences); Ming Tang (Chinese Academy of Sciences, China); Yingying Chen (CASIA); Jinqiao Wang (Institute of Automation, Chinese Academy of Sciences); Hanqing Lu (NLPR, Institute of Automation, CAS)

Multi-hierarchical Independent Correlation Filters for Visual Tracking

Shuai Bai (Beijing University of Posts and Telecommunications); zhiqun He (SenseTime Group Limited); Yuan Dong (Beijing University of Posts and Telecommunications); Hongliang Bai (Beijing Faceall Technology Co.,Ltd)

3d Motion Recovery Via Low Rank Matrix Restoration With Hankel-Like Augmentation

Jingyu Yang (Tianjin University); Jiabin Shi (Tianjin university); Yuyuan Zhu (Tianjin University); Kun Li (Tianjin University); Chunping Hou (Tianjin University)

O4: Tuesday, July 7, 2020

O4: Special Session: Graph Neural Networks for Multimedia Representation Learning

Time: 16:30 – 17:30
Chair: Zheng Wang (National Institute of Informatics)

Learning Neighborhood-Reasoning Label Distribution (NRLD) for Facial Age Estimation

Zongyong Deng (Ningxia University); Mo Zhao (Ningxia University); Hao Liu (Ningxia University); Zhenhua Yu (Ningxia University); Feng Feng (Ningxia University)

Structure-Aware Graph Construction for Point Cloud Segmentation with Graph Convolutional Networks

Shanghong Wang (Shanghai Jiao Tong University); Wenrui Dai (Shanghai Jiao Tong University); Mingxing Xu (Shanghai Jiao Tong University); Chenglin Li (Shanghai Jiao Tong University); Junni Zou (Shanghai Jiao Tong University); Hongkai Xiong (Shanghai Jiao Tong University)

Graph Attention Model Embedded with Multi-Modal Knowledge for Depression Detection

Wenbo Zheng (School of Software Engineering, Xi'an Jiaotong University); Lan Yan (The State Key Laboratory for Management and Control of Complex Systems, Institute of Automation, Chinese Academy of Sciences); Chao Gou (School of Intelligent Systems Engineering, Sun Yat-sen University); Fei-Yue Wang (The State Key Laboratory for Management and Control of Complex Systems, Institute of Automation, Chinese Academy of Sciences)

Topology Discriminative Pooling via Graph Kernel Derived Nodes and Edges Co-embedding

Chenrui Zhang (Beijing University); Yifeng Huang (North China Electric Power University); Xiaoqing Lyu (Beijing University); Zhi Tang (Beijing University)

O5: Tuesday, July 7, 2020

O5: Special Session: Learning-based Geometry Modeling from Light Fields and Beyond

Time:　　　16:30 – 17:30
Chair:　　　Junhui Hou (City University of Hong Kong)

Surface Consistent Light Field Extrapolation over Stratified Disparity and Spatial Granularities

Jie Chen (Hong Kong Baptist University); Lap-Pui Chau (Nanyang Technological University); Junhui Hou (City University of Hong Kong, Hong Kong)

Accurate Light Field Depth Estimation via an Occlusion-aware Network

Chunle Guo (City University of Hong Kong); Jing Jin (City University of Hong Kong); Junhui Hou (City University of Hong Kong, Hong Kong); Jie Chen (Hong Kong Baptist University)

Angularly consistent light field video interpolation

Pierre David (Inria); Mikaël Le Pendu (Trinity College Dublin); Christine Guillemot (INRIA)

Accurate 3d Reconstruction From Circular Light Field Using Cnn-Lstm

Zhengxi Song (Northwestern Polytechnical University); Hao Zhu (Northwestern Polytechnical University); Qi Wu (Northwestern Polytechnical University); Xue Wang (Northwestern Polytechnical University); HONGDONG LI (Australian National University, Australia); Qing Wang (Northwestern Polytechnical University)

O6: Tuesday, July 7, 2020

O6: Neural Networks for Multimedia I

Time:　　　16:30 – 17:30
Chair:　　　Aladine Chetouani (University of Orleans)

M-ary Quantized Neural Networks

Jen-Tzung Chien (National Chiao Tung University); Su-Ting Chang (National Chiao Tung University)

Network Architecture Reasoning via Deep Deterministic Policy Gradient

Huidong Liu (Ningxia University); Fang Du (Ningxia University); Xiaofen Tang (Ningxia University); Hao Liu (Ningxia University); Zhenhua Yu (Ningxia University)

Hardware-aware Transformable Architecture Search with Efficient Search Space

Yuhang Jiang (Tsinghua University); Xin Wang (Tsinghua University); Wenwu Zhu (Tsinghua University)

Lightweight Compression Of Neural Network Feature Tensors For Collaborative Intelligence

Robert Cohen (Simon Fraser University); Hyomin Choi (Simon Fraser University); Ivan Bajic (Simon Fraser University)

O7: Tuesday, July 7, 2020

O7: Multimedia Retrieval I

Time: 16:30 – 17:30
Chair: Bingkun Bao (Nanjing University of Posts and Telecommunications)

Multi-similarity Semantic Correctional Hashing For Cross Modal Retrieval

Jiawei Zhan (Beijing University Shenzhen Graduate School); Song Liu (Beijing University Shenzhen Graduate School); Zhaoguo Mo (Beijing University Shenzhen Graduate School); Yuesheng Zhu (Beijing University Shenzhen Graduate School)

User Conditional Hashtag Recommendation for Micro-videos

Shang Liu (Wuhan University); Jiayi Xie (Wuhan University); Cong Zou (WHU); Zhenzhong Chen (Wuhan University)

RankVQA: Answer Re-ranking for Visual Question Answering

Yanyuan Qiao (National Lab of Pattern Recognition, Institute of Automation,Chinese Academy of Sciences); Zheng Yu (School of Software & Microelectronics, Beijing University); Jing Liu (National Lab of Pattern Recognition, Institute of Automation,Chinese Academy of Sciences)

Attentive Generative Adversarial Network to Bridge Multi-domain Gap for Image Synthesis

Min Wang (Beijing Jiaotong University); Congyan Lang (Beijing Jiaotong University); Liqian Liang (Beijing Jiaotong University); Gengyu Lyu (School of Computer and Information Technology, Beijing Jiaotong University); Songhe Feng (School of Computer and Information Technology, Beijing Jiaotong University); Tao Wang (Beijing Jiaotong University)

O8: Tuesday, July 7, 2020

O8: Image Forensics

Time: 16:30 – 17:30
Chair: A.V. Subramanyam (Indraprastha Institute of Information Technology, Delhi)

Warwick Image Forensics Dataset for Device Fingerprinting In Multimedia Forensics

Yijun Quan (University of Warwick); Chang-Tsun Li (Deakin University, Australia); Yujue Zhou (University of Warwick); li li (Hangzhou Dianzi University)

Fsspotter: Spotting Face-Swapped Video By Spatial And Temporal Clues

Peng Chen [1,2]; Jin Liu [1,2]; Tao Liang [1,2]; Guangzhi Zhou [1,2]; Hongchao Gao [1]; Jiao Dai [1]; Jizhong Han [1] (1. Institute of Information Engineering,Chinese Academy of Sciences. 2. School of Cyber Security, University of Chinese Academy of Sciences)

Decoupling-GAN for camera model identification of JPEG compressed images

QIAN SHU (Sun Yat-sen University); Jiangqun Ni Sun Yat-sen Univ. (); HAO XIE (Sun Yat-sen University)

Fooled by Imagination: Adversarial Attack to Image Captioning via Perturbation in Complex Domain

Shaofeng Zhang (University of Electronic Science and Technology of China); Zheng Wang (UESTC); Xing Xu (University of Electronic Science and Technology of China); Xiang Guan (University of Electronic Science and Technology of China); Yang Yang (University of Electronic Science and Technology of China)

O9: Wednesday, July 8, 2020

O9: Image/Video Enhancement I

Time: 10:30 – 11:30
Chair: Li Song (Shanghai Jiao Tong University)

Eigan: Enhanced Inpainting Generative Adversarial Network

Feiyu Chen (Shanghai Key Laboratory of Intelligent Information Processing, School of Computer Science, Fudan University); Wei Deng (Shanghai Key Laboratory of Intelligent Information Processing, School of Computer Science, Fudan University); Chuanfa Zhang (Fudan University); Kangzheng Gu (Fudan University); Wenqiang Zhang (Fudan University)

Learning-based Quality Enhancement for Scalable Coded Video over Packet Lossy Networks

Shengwei Yu (Shanghai Jiao Tong University); Xun Tong (Shanghai Jiao Tong University); Yan Huang (Shanghai Jiao Tong University); Rong Xie (Shanghai Jiao Tong University); Li Song (Shanghai Jiao Tong University)

Enhancing VVC through CNN-based Post-Processing

Fan Zhang (University of Bristol); Chen Feng (University of Bristol); David Bull (University of bristol)

Two-stage Depth Video Recovery with Spatiotemporal Coherence

Quewei Li (National Key Lab for Novel Software Technology, Nanjing University); Jie Guo (Nanjing University); Qinyu Tang (National Key Lab for Novel Software Technology, Nanjing University; Samsung Electronics(China) R&D Center, Nanjing); Yanwen Guo (Nanjing University); Jinghui Qian (Nanjing University)

O10: Wednesday, July 8, 2020

O10: Emerging Multimedia Applications I

Time: 10:30 – 11:30

Chair: Sanghoon Lee (Yonsei University)

SmartText: Learning to Generate Harmonious Textual Layout over Natural Image
Peiying Zhang (East China Normal University); Chenhui Li (East China Normal University); Changbo Wang (East China Normal University)
Text To Image Synthesis With Bidirectional Generative Adversarial Network
Zixu Wang (HNU); Zhe Quan (HNU); Zhi-Jie Wang (CQU); Xinjian Hu (HNU); Yangyang Chen (HNU)
Character Region Awareness Network for Scene Text Recognition
Mingyu Shang (Beijing University); Jie Gao (Beijing University); Jun Sun (Beijing University)

O11: Wednesday, July 8, 2020

O11: Immersive Media I

Time: 10:30 – 11:30

Chair: Sebastian Knorr (Technical University of Berlin)

MA360: Multi-Agent Deep Reinforcement Learning based Live 360-Degree Video Streaming on Edge
Yixuan Ban (Beijing University); Yuanxing Zhang (Beijing University); Haodan Zhang (Beijing University); Xinggong Zhang (PKU); Zongming Guo (Beijing University)
Endowing Deep 3d Models With Rotation Invariance Based On Principal Component Analysis
Zelin Xiao (Sun Yat-sen University); Hongxin Lin (Sun Yat-sen University); Renjie Li (Sun Yat-sen University); Lishuai Geng (Sun Yat-sen University); Hongyang Chao (Sun Yat-sen University); Shengyong Ding (Pixtalks Tech)
Lossy Geometry Compression of 3D Point Cloud Data via an Adaptive Octree-guided Network
Xuanzheng Wen (Shenzhen University); Xu Wang (Shenzhen University); Junhui Hou (City University of Hong Kong, Hong Kong); Lin Ma (Tencent AI Lab); Yu Zhou (Shenzhen University); Jianmin Jiang (Shenzhen University)
Towards The Instant Tile-Switching For Dash-Based Omnidirectional Video Streaming: Random Access Reference Frame
Mingyi Yang (State Key Laboratory of ISN, Xidian University, Xi'an, China); Wenjie Zou (Xidian University); Jiarun Song (Xidian University); FuZheng Yang (Xidian University)

2020-07-08

O12: Wednesday, July 8, 2020

O12: Special Session: Smart Camera

Time: 14:30 – 15:30
Chair: Lu Fang (Tsinghua University)

Near-infrared Image Guided Reflection Removal

Yuchen Hong (Beijing University of Posts and Telecommunications); Youwei Lyu (Beijing University of Posts and Telecommunications); Si Li (Beijing University of Posts and Telecommunications); Boxin Shi (Beijing University)

CAnOPIC: Pre-Digital Privacy-Enhancing Encodings for Computer Vision

Jasper T Tan (Rice University); Salman Siddique Khan (IIT Madras); Vivek Boominathan (Rice University); Jeffrey Byrne (STR; Visym Labs); Richard Baraniuk (Rice University); Kaushik Mitra (IIT Madras); Ashok Veeraraghavan (Rice University)

Inductive Guided Filter: Real-time Deep Matting with Weakly Annotated Masks on Mobile Devices

Yaoyi Li (Shanghai Jiao Tong University); Jianfu Zhang (Shanghai Jiao Tong University); Weijie Zhao (Versa-AI); Weihao Jiang (Shanghai Jiaotong University); Hongtao Lu (Shanghai Jiao Tong University)

O13: Wednesday, July 8, 2020

O13: Special Session: Domain Adaptation for Multimedia Semantic Understanding

Time: 14:30 – 15:30
Chair: Sicheng Zhao (University of California Berkeley)

A General Re-Ranking Method Based On Metric Learning For Person Re-Identification

Tongkun Xu (School of Mechanical, Electrical and Information Engineering, Shandong University, Weihai); Xin Zhao (jd.com); Jiamin Hou (China University of Mining & Technology,Beijing); Jiyong Zhang (Hangzhou Dianzi University); Xinhong Hao (BeiJing Institute of Technology); Jian Yin (Department of Computer, Shandong University, Weihai, China)

Domain-Invariant Region Proposal Network for Cross-Domain Detection

Xuebin Yang (University of Science and Technology of China); Shouhong Wan (Univeristy of Science and Technology of China); Peiquan Jin (Universiity of Science and Technology of China)

Learning Likelihood estimates for Open Set Domain Adaptation

Haiyang Zhang (Beijing University of Posts and Telecommunications); Dixi Chen (Beijing University of Posts and Telecommunications); Liang Liu (Beijing University of Posts and Telecommunications)

O14: Wednesday, July 8, 2020

O14: Immersive Media II

Time: 14:30 – 15:30
Chair: Sebastian Schwarz (Nokia)

Expression-Aware Face Reconstruction Via A Dual-Stream Network

Xiaoyu Chai (Wuhan University); Jun Chen (Wuhan University); Chao Liang (Wuhan University); Dongshu Xu (Wuhan University); Chia-Wen Lin (National Tsing Hua University)

Mesh Saliency Detection Using Convolutional Neural Networks

Stavros E. Nousias (University of Patras); Gerasimos Arvanitis (UNIVERSITY OF PATRAS); Aris Lalos (Industrial Systems Institute, Athena Research Center); Konstantinos Moustakas (ECE/UPATRAS)

OECS: Towards Online Extrinsics Correction for the Surround-view System

Tianjun Zhang (Tongji University); Lin Zhang (Tongji University, China); Ying Shen (Tongji University); Yong Ma (Jiangxi Normal University); Shengjie Zhao (Tongji University); Yicong Zhou (University of Macau)

Image-based 3D mesh Denoising Through a Block Matching 3D Convolutional Neural Network Filtering Approach

Gerasimos Arvanitis (UNIVERSITY OF PATRAS); Aris Lalos (Industrial Systems Institute, Athena Research Center); Konstantinos Moustakas (ECE/UPATRAS)

O15: Wednesday, July 8, 2020

O15: Neural Networks for Multimedia II

Time: 14:30 – 15:30
Chair: Zhenhua Guo (Graduate School at Shenzhen, Tsinghua University)

Variational Bayesian Sparsification for Distillation Compression

Yue Ming (BUPT); Hao Fu (BUPT)

Matrix Smoothing: A Regularization for DNN with Transition Matrix under Noisy Labels

Xianbin Lv (Tsinghua University); Dongxian Wu (Tsinghua University); Shutao Xia (Tsinghua University)

Two-Way Feature-Aligned And Attention-Rectified Adversarial Training

Haitao Zhang (Tianjin University); Fan Jia (Tianjin University); Quanxin Zhang (Beijing Institute of Technology); Yahong Han (Tianjin University); Xiaohui Kuang (National Key Laboratory of Science and Technology on Information System Security); Yu-an Tan (Beijing Institute of Technology)

Spike Sorting Based on Low-Rank and Sparse Representation

Libo Huang (Guangdong University of Technology); Bingo Wing Kuen Ling (Guangdong University of Technology); Yan Zeng (Guangdong University of Technology); Lu Gan (Brunel University London)

O16: Wednesday, July 8, 2020

O16: DL in Emerging Multimedia Applications I

Time: 14:30 – 15:30
Chair: Chongyang Zhang (Shanghai Jiao Tong University)

State Representation Learning for Effective Deep Reinforcement Learning
Jian Zhao (University of Science and Technology of China); Wengang Zhou (University of Science and Technology of China); Tianyu Zhao (University of Science and Technology of China); Yun Zhou (University of Science and Technology of China); Houqiang Li (University of Science and Technology of China)
Exploring Structure-Adaptive Graph Learning for Robust Semi-Supervised Classification
Xiang Gao (Beijing University); Wei Hu (Beijing University); Zongming Guo (Beijing University)
Novel Peptide Sequencing with Deep Reinforcement Learning
Zhengcong Fei (Chinese Academy of Sciences, Institute of Computing Technology)
Exploring Hypergraph Representation on Face Anti-spoofing Beyond 2D Attacks
Gusi Te (Beijing University); Wei Hu (Beijing University); Zongming Guo (Beijing University)

O17: Wednesday, July 8, 2020

O17: Multimedia Retrieval II

Time: 14:30 – 15:30
Chair: Meng Liu (Shandong Jianzhu University)

Cross-Modal Guidance Network for Sketch-Based 3D shape Retrieval
Weidong Dai (Tongji University); Shuang Liang (Tongji University)
Deep Self-taught Graph Embedding Hashing with Pseudo Labels for Image Retrieval
Yu Liu (Huazhong University of Science and Technology); Yangtao Wang (Huazhong University of Science and Technology); Jingkuan Song (UESTC); Chan Guo (HUST); ke zhou (HUST); Zhili Xiao (Tencent)
OCEAN: A Dual Learning Approach for Generalized Zero-Shot Sketch-Based Image Retrieval
Jiawen Zhu (UESTC); Xing Xu (University of Electronic Science and Technology of China); Fumin Shen (UESTC); Roy Ka-Wei Lee (University of Saskatchewan); Zheng Wang (UESTC); Heng Tao Shen (University of Electronic Science and Technology of China (UESTC))
Tell the truth from the front: anti-disguise vehicle re-identification
Wenqian Zhu (Wuhan University); Ruimin Hu (Wuhan University); Zhongyuan Wang (National Engineering Research Center for Multimedia Software, Wuhan University, China); Dengshi Li (Jianghan University); Xiyue Gao (Wuhan Univ.)

O18: Thursday, July 9, 2020

O18: Special Session: Recent Advances in Immersive Imaging Technologies

Time: 13:30 – 14:30
Chair: Martin Alain (Trinity College Dublin)

Projection Mapping System to a Widely Dynamic Sphere with Circumferential Markers

Yuri Mikawa (The University of Tokyo); Tomohiro Sueishi (The University of Tokyo); Yoshihiro Watanabe (Tokyo Institute of Technology); Masatoshi Ishikawa (The University of Tokyo)

Imaging-correlated Intra Prediction for Plenoptic 2.0 Video Coding

Lingjun LI (Tsinghua University); Xin Jin (Tsinghua University); Tingting Zhong (Tsinghua University)

A Viewport-driven Multi-metric Fusion Approach for 360-Degree Video Quality Assessment

Roberto GA Azevedo (EPFL); Neil Birkbeck (YouTube/Google); Ivan Janatra (Youtube/Google); Balu Adsumilli (YouTube/Google); Pascal Frossard (EPFL)

O19: Thursday, July 9, 2020

O19: Human Analysis I

Time: 13:30 – 14:30
Chair: Tanaya Guha (University of Warwick)

Iterative Dynamic Generic Learning for Single Sample Face Recognition with a Contaminated Gallery

Meng Pang (Hong Kong Baptist University); Yiu-ming CHEUNG (Hong Kong Baptist University); QIQUAN SHI (Huawei Noah's Ark Lab); Mengke Li (Hong Kong Baptist University)

Human Parsing Based Alignment with Multi-task Learning for Occluded Person Re-identification

Houjing Huang (CASIA); Xiaotang Chen (Institute of Automation, Chinese Academy of Sciences); KAIQI HUANG (Chinese Academy of Sciences, China)

Weakly Supervised Video Anomaly Detection Via Center-Guided Discriminative Learning

Boyang Wan (Jiangxi University of Finance and Economics); Yuming Fang (Jiangxi University of Finance and Economics); Xue Xia (Jiangxi University of Finance and Economics); Jiajie Mei (Jiangxi University of Finance and Economics)

An Automatic Framework For Generating Labanotation Scores From Continuous Motion Capture Data

Min Li (Beijing Jiaotong University); Zhenjiang Miao (Beijing Jiaotong University); Cong Ma (Beijing Jiaotong University); Ang Li (Beijing Jiaotong University); Tianyu Zhou (Beijing Jiaotong University)

O20: Thursday, July 9, 2020

O20: Emerging Multimedia Applications II

Time: 13:30 – 14:30
Chair: Sanghoon Lee (Yonsei University)

Style-Conditioned Music Generation
Yu-Quan Lim (University of Malaya); Chee Seng Chan (University of Malaya); Fung Ying Loo (University of Malaya)
Weakly-Supervised Plate and Food Region Segmentation
Wataru Shimoda (The University of Electro-Communications, Tokyo); Keiji Yanai (Univ. Electro-Comm., Tokyo)
Directed Exploration Via Learnable Probability Distribution For Random Action Selection
Petros Giannakopoulos (National and Kapodistrian University of Athens); Aggelos Pikrakis (University of Piraeus); Yannis Cotronis (National and Kapodistrian University of Athens)
Detail-preserving Arbitrary Style Transfer
Ting Zhu (Tianjin University); Shiguang Liu (Tianjin University)

O21: Thursday, July 9, 2020

O21: Multimedia for Society and Health II

Time: 13:30 – 14:30
Chair: Yinghuan Shi (Nanjing University)

Predicting cancer risks by a constraint-based causal network
Xuewen Yan (Chongqing University); Jun Liao (Chongqing University); Hao Luo (Chongqing University); Yi Zhang (Chongqing University); Li Liu (Chongqing University)
Graph-Based Kinship Reasoning Network
Wanhua Li; Kangchen Lv; Jiwen Lu; Jianjiang Feng; Jie Zhou (all: Tsinghua University); Yingqiang Zhang (Huawei Technologies Co.,Ltd.);
Deep level set with confidence map and boundary loss for medical image segmentation
Yaoyue Zheng (Xi'an Jiaotong University); Zhang Chen (Xi'an Jiaotong University); Xiaojian Li (Xi'an Jiaotong University); Xiangyu Si (Xi'an Jiaotong University); Liangjie Dong (Xi'an Jiaotong University); Zhiqiang Tian (Xi'an Jiaotong University)
Automatic detection of pathological myopia and high myopia on fundus images
Siying Dai; Leiting Chen; ting lei; Chuan Zhou; Yang Wen (all: School of Computer Science and Engineering, University of Electronic Science and Technology of China)

O22: Thursday, July 9, 2020

O22: Multimedia Mining

Time: 13:30 – 14:30
Chair: Lin Li (Wuhan University of Technology)

Structure Preserving Multi-View Dimensionality Reduction

Zhan Wang (Beijing Institute of Technology); Lizhi Wang (Beijing Institute of Technology); Hua Huang (Beijing Institute of Technology)

Time-Sensitive Collaborative Interest Aware Model for Session-based Recommendation

Yang Lv (University of Science and Technology of China); Liansheng Zhuang (University of Science and Technology of China); Pengyu Luo (Hefei University of Technology); Houqiang Li (University of Science and Technology of China); Zheng-Jun Zha (University of Science and Technology of China)

Towards Making Unsupervised Graph Hashing Robust

Xuesong Gu (NUDT); Guohua Dong (National University of Defense Technology); Xiang Zhang (National University of Defense Technology); long lan (NUDT); Zhigang Luo (National University of Defense Technology)

Statistical Detection Of Collective Data Fraud

Ruoyu Wang (Shanghai Jiao Tong University); Xiaobo Hu (Beijing University); Daniel W Sun (CSIRO); Guoqiang Li (Shanghai Jiaotong University); Raymond K Wong (University of New South Wales); Shiping Chen (data61.csiro); Jianquan Liu (NEC Corporation)

O23: Thursday, July 9, 2020

O23: Special Session: Deep Representations for Visual Quality Assessment

Time: 13:30 – 14:30
Chair: Giuseppe Valenzise (Centre National de la Recherche Scientifique)

Active Inference of GAN for No-Reference Image Quality Assessment

Jupo Ma (Xidian University); Jinjian Wu (Xidian University); Leida Li (Xidian University); Weisheng Dong (Xidian University); Xuemei Xie (Xidian University)

Combination of deep learning-based features for image quality assessment without reference

Aladine Chetouani (Université d'Orléans, France)

Spatial Attentive Image Aesthetic Assessment

Ying Xu (Tsinghua university); Yi Wang (Chinese University of Hong Kong); Huaixuan Zhang (Tsinghua university); Yong Jiang (Tsinghua University)

O24: Thursday, July 9, 2020

024: Object Detection

Time: 16:00 – 17:00
Chair: Xinghui Dong (University of Manchester)

Classification Constrained Discriminator for Domain Adaptive Semantic Segmentation

Tao Chen (Nanjing University of Science and Technology); Jian Zhang (UTS); Guo-Sen Xie (Inception Institute of Artificial Intelligence); Yazhou Yao (Nanjing University of Science and Technology); Xiaoshui Huang (The University of Sydney); Zhenmin Tang (Nanjing University of Science and Technology)

A Lightweight High-resolution Representation Backbone for Real-time Keypoint-based Object Detection

Jiansheng Dong (Wuhan University of Technology); JINGLING YUAN (Wuhan University of Technology); Lin Li (Wuhan University of Technology, China); Xian Zhong (Wuhan University of Technology)

DG-FPN: Learning Dynamic Feature Fusion based on Graph Convolution Network for Object Detection

Li Huayu (Fudan university); Shuyu Miao (Fudan University); Rui Feng (Fudan University)

LightningNet : Fast and Accurate Semantic Segmentation for Autonomous Driving Based on 3D LiDAR Point Cloud

Kaihong Yang (School of Computer Science & Engineering, South China University of Technology); Sheng Bi (School of Computer Science & Engineering, South China University of Technology); Min Dong (School of Computer Science & Engineering, South China University of Technology)

O25: Thursday, July 9, 2020

O25: Music & Speech

Time: 16:00 – 17:00
Chair: Kong Aik lee (NEC Corporation)

Learn A Robust Representation For Cover Song Identification Via Aggregating Local And Global Music Temporal Context

Jiang Chaoya (Digital Audio Research Laboratory, Computer Research Institute, Beijing University); Deshun Yang (Beijing University); Xiaoou Chen (Beijing University)

Deep Composer: Deep Neural Hashing and Retrieval Approach to Automatic Music Generation

Brandon J Royal (University of Central Florida); Kien Hua (University of Central Florida); Brenton Zhang (University of Central Florida)

SNR-based teachers-student technique for speech enhancement

Xiang Hao (Inner Mongolia University); Xiangdong Su (Inner Mongolia University); Zhiyu Wang (Inner Mongolia University); Qiang Zhang (Inner Mongolia University); HuaLi Xu (Inner Mongolia University); Guanglai Gao (Inner Mongolia University)

Residual Attention Based Network for Automatic Classification of Phonation Modes

Xiaoheng Sun (Fudan University); Yiliang Jiang (Fudan University); Wei Li (Fudan University)

O26: Thursday, July 9, 2020

O26: DL in Emerging Multimedia Applications II

Time: 16:00 – 17:00
Chair: Chongyang Zhang (Shanghai Jiao Tong University)

Knowledge-based Fine-Grained Classification for Few-Shot Learning

Jiabao Zhao (East China Normal University); Xin Lin (ECNU); Jie Zhou (East China Normal University); Jing Yang (ECNU); Liang He (ECNU); Zhaohui Yang (Insigma Hengtian Software Ltd.)

PA-GGAN: Session-Based Recommendation with Position-Aware Gated Graph Attention Network

Jinshan Wang (Beijing University of Posts and Telecommunications); Qianfang Xu (Beijing University of Posts and Telecommunications); Jiahuan Lei (MeituanDianping); Chaoqun Lin (Beijing University of Posts and Telecommunications); Bo Xiao (Beijing University of Posts and Telecommunications)

Glad: Global and Local Anomaly Detection

Lihai Nie (Tianjin Univerisity); Laiping Zhao (Tianjin University); Keqiu Li (Tianjin University)

Investigating Class-level Difficulty Factors in Multi-label Classification Problems

Mark A Marsden (Dublin City University); Kevin McGuinness (Insight Centre for Data Analytics); Joseph Antony (Insight Centre for Data Analytics, DCU, Ireland); Haolin Wei (Insight Centre for Data Analytics, DCU, Ireland); Milan Redzic (Huawei); Jian Tang (Huawei); Zhilan Hu (Huawei); Alan Smeaton (Insight Centre for Data Analytics, Dublin City University); Noel O'Connor (Dublin City University (DCU))

O27: Thursday, July 9, 2020

O27: Human Analysis II

Time: 16:00 – 17:00
Chair: Tanaya Guha (University of Warwick)

Multi-Task Learning via Co-Attentive Sharing for Pedestrian Attribute Recognition

Haitian Zeng (Tsinghua University); Haizhou Ai (Tsinghua University); Zijie Zhuang (Tsinghua University); Long Chen (Tsinghua University)

Speaker Personality Recognition with Multimodal Explicit Many2many Interactions

Liangqing Wu (Soochow University); Dong Zhang (Soochow University); Qiyuan Liu (Soochow University); Shoushan Li (Soochow University); Zhou Guodong (Soochow University)

Joint Facial Action Unit Intensity Prediction and Region Localisation

Yachun Fan (Beijing Normal University); Jie Shen (Imperial College London); Housen Cheng (Beijing Normal University); Feng Tian (Bournemouth University)

Kinmix: A Data Augmentation Approach For Kinship Verification

Chaohui Song (Beijing University of Posts and Telecommunications); Haibin Yan (Beijing University of Posts and Telecommunications)

O28: Thursday, July 9, 2020

O28: Action Recognition

Time: 16:00 – 17:00
Chair: Wei-Shi Zheng (Sun Yat-sen University)

Scale Matters: Temporal Scale Aggregation Network for Precise Action Localization in Untrimmed Videos

Guoqiang Gong (Beijing University); Liangfeng Zheng (Beijing University); Yadong Mu (Beijing University)

Human-Object Relation Network for Action Recognition in Still Images

Wentao Ma (Tongji University); Shuang Liang (Tongji University)

Deep Selective Feature Learning For Action Recognition

ziqiang li (Chongqing university); Yongxin Ge (Chongqing University); Jinyuan Feng (Chongqing University); xiaolei qin (Chongqing University); jiaruo yu (Chongqing University); Hui Yu (University of Portsmouth)

Multi-Task Learning of Generalizable Representations for Video Action Recognition

Zhiyu Yao (Tsinghua University); Yunbo Wang (Tsinghua University); Mingsheng Long (Tsinghua University); Jianmin Wang ("Tsinghua University, China"); Philip S Yu (UIC); Jiaguang Sun (Tsinghua University)

O29: Thursday, July 9, 2020

O29: Image/Video Enhancement II

Time: 16:00 – 17:00
Chair: Yuexian Zou (Beijing University)

Single Image Rain Removal Boosting Via Directional Gradient

Wu Ran (Fudan University); Youzhao Yang (Fudan University); Hong Lu (Fudan University)

Flexible Bilevel Image Layer Modeling for Robust Deraining

Jian Chen (Dalian University of Technology); Pan Mu (Dalian University of Technology); Risheng Liu (Dalian University of Technology); Xin Fan (Dalian University of Technology); Zhongxuan Luo (DALIAN UNIVERSITY OF TECHNOLOGY)

Region Adaptive Two-Shot Network For Single Image Dehazing

Hui Li; Qingbo Wu; King Ngi Ngan; Hongliang Li; Fanman Meng (all: University of Electronic Science and Technology of China)

Kernel Clustering on Symmetric Positive Definite Manifolds via Double Approximated Low Rank Representation

Xinglin Piao (Peng Cheng Laboratory; Dalian University of Technology); Yongli Hu (Beijing University of Technology); Junbin Gao (University of Sydney, Australia); Yanfeng Sun (Beijing University of Technology); Xin Yang (Dalian University of Technology); Baocai Yin (Dalian University of Technology); Wenwu Zhu (Tsinghua University); Ge Li (Beijing University)

Poster Sessions

P1: Tuesday, July 7, 2020

P1: Multimedia Security, Privacy and Forensics

Time: 11:30 – 13:00
Chair: Wong Kok Sheik (Monash University Malaysia)

Paper
Constrained R-CNN: A general image manipulation detection model
Chao Yang (Hunan University); Huizhou Li (Hunan University); Fangting Lin (Hunan University); Bin Jiang (Hunan University); Hao Zhao (Alipay (Hangzhou) Information & Technology Co., Ltd.)
Proxy Task Learning for Cross-domain Person Re-identification
Houjing Huang (CASIA); Xiaotang Chen (Institute of Automation, Chinese Academy of Sciences); KAIQI HUANG (Chinese Academy of Sciences, China)
A Reversible Contrast Enhancement Scheme for Color Images
Hao-Tian Wu (South China University of Technology); Zhihao Guan (South China University of Technology)
A Privacy-Preserving Scheme for Convolutional Neural Network-based Applications in Mobile Cloud
Chang Xia (Nanjing University); Jingyu Hua (Nanjing University, China); Wei Tong (Nanjing University); Yayuan Xiong (Nanjing University); Sheng Zhong (Nanjing University)
Steganographer Detection via Enhancement-aware Graph Convolutional Network
Zhi Zhang (Shenzhen University); Mingjie Zheng (The Hong Kong Polytechnic University); Sheng-hua Zhong (Shenzhen University); Yan Liu (The Hong Kong Polytechnic University)
Auto-Generating Neural Networks with Reinforcement Learning for Multi-Purpose Image Forensics
Yujun Wei (Sun Yat-sen University); Yifang Chen (Sun Yat-sen University); Xiangui Kang (Sun Yat-Sen University); Z. Jane Wang (University of British Columbia); Liang Xiao (Xiamen University)

P2: Tuesday, July 7, 2020

P2: Image/Video Acquisition and Compression II

Time: 11:30 – 13:00
Chair: Zhan Ma (Nanjing University)

Paper
Multi-Gradient Convolutional Neural Network Based In-Loop Filter for VVC
Zhijie Huang (Beijing University); Yunchang Li (Beijing University); Jun Sun (Beijing University)
Object-Based Image Coding: A Learning-Driven Revisit
Qi Xia (Nanjing University); Haojie Liu (Nanjing University); Zhan Ma (Nanjing University)
High Accuracy Compressive Chromo-tomography Reconstruction via Convolutional Sparse Coding
Baoping Li (Beijing University of Posts and Telecommunications); Xuesong Zhang (Beijing University of Posts and Telecommunications); Jing Jiang (Beijing Union University); Yuzhong Chen (Beijing University of Posts and Telecommunications); Qi Zhang (Beijing University of Posts and Telecommunications); Anlong Ming (Beijing University of Posts and Telecommunications)
A Case Study of Machine Learning Classifiers for Real-Time Adaptive Resolution Prediction in Video Coding
Madhukar Bhat (VITEC/ LS2N); Jean-Marc Thiesse (VITEC S.A.); Patrick Le Callet ("Universite de Nantes, France")
Enhanced CU Partitioning Search Method for Intra Coding in HEVC
Yunchang Li (Beijing University); Jun Sun (Beijing University)
Compressed Video Sensing Network based on Alignment Prediction and Residual Reconstruction
Xi Ling (South China University of Technology); Chunling Yang (South China University of Technology); Hanqi Pei (South China University of Technology)

P3: Tuesday, July 7, 2020

P3: Cross-model and Multi-modal Media Analysis II

Time: 11:30 – 13:00
Chair: Jianqing Liang (Tianjin University)

Paper
Towards Better Graph Representation: Two-Branch Collaborative Graph Neural Networks for Multimodal Marketing Intention Detection
Lu Zhang (University of Technology Sydney); Jian Zhang (UTS); Zhibin Li (University of Technology Sydney); JingSong Xu (University of Technology Sydney)
Multi-View Subspace Clustering Via Non-Convex Tensor Rank Minimization
Xiaoli Sun (Shenzhen University); Youjuan Wang (Shenzhen University); xiujun zhang (Shenzhen Polytechnic)
Learning class prototypes via Anisotropic Combination of Aligned Modalities for few-shot learning
Jieya Lian (Wuhan University Of Technology); Haojie Wang (Wuhan University Of Technology); Shengwu Xiong (Wuhan University of Technology)
Adaptive Directional Walks For Pose Estimation From Single Body Depths
Jaehwan Kim (ETRI); Junsuk Lee (ETRI)
Multimodal Video Saliency Analysis with User-biased Information
Jiangyue Xia (Tsinghua University); Jingqi Tian (Tsinghua University); Hui Qiao (Tsinghua University); Yichen Li (University of Science and Technology Beijing); Jiangtao Wen (Tsinghua University); Yuxing Han (South China Agriculture University)
MODELING LOCAL AND GLOBAL CONTEXTS FOR IMAGE CAPTIONING
Peng Yao (University of Science and Technology Beijing); Jiangyun Li (University of Science and Technology Beijing); Longteng Guo (Institute of Automation, Chinese Academy of Sciences); Jing Liu (National Lab of Pattern Recognition, Institute of Automation,Chinese Academy of Sciences)
Self-Adaptive Embedding for Few-shot Classification by Hierarchical Attention
Xueliang Wang (University of Science and Technology of China); Feng Wu (University of Science and Technology of China); Jie Wang (University of Science and Technology of China)

P4: Super-resolution and Saliency Detection

Time: 11:30 – 13:00
Chair: Hong-Han Shuai (National Chiao Tung University)

Paper
Fused Recurrent Network via Channel Attention for Remote Sensing Satellite Image Super-Resolution
Xinyao Li (University of Electronic Science and Technology of China); Dongyang Zhang (University of Electronic Science and Technology of China); Zhenwen Liang (University of Electronic Science and Technology of China); Deqiang Ouyang (University of Electronic Science and Technology of China); Jie Shao (University of Electronic Science and Technology of China)
Co-Saliency Detection Using Collaborative Feature Extraction And High-To-Low Feature Integration
Jingru Ren (Shanghai University); Zhi Liu (Shanghai University, China); Gongyang Li (Shanghai University); Xiaofei Zhou (Hangzhou Dianzi University); Cong Bai (Zhejiang University of Technology); Guangling Sun (Shanghai University)
Multiresolution Mixture Generative Adversarial Network For Image Super-Resolution
Yudiao Wang (Xi'an Jiaotong University); Xuguang Lan (Xi'an Jiaotong University); Yinshu Zhang (Xi'an Jiaotong University); Ruixue Miao (Northeast Normal University); Zhiqiang Tian (Xi'an Jiaotong University)
Salient object detection with boundary information
Kai Chen (University of Shanghai for Science and Technology); Yongxiong Wang (University of Shanghai for Science and Technology); Chuanfei Hu (University of Shanghai for Science and Technology); Hang Shao (University of Shanghai for Science and Technology)
Prinet: A Prior Driven Spectral Super-Resolution Network
Renlong Hang (Nanjing University of Information Science and Technology); Zhu Li (University of Missouri, Kansas City); Qingshan Liu (Nanjing University of Information Science & Technology); Shuvra Bhattacharyya (University of Maryland)
Lightweight Single Image Super-Resolution through Efficient Second-order Attention Spindle Network
Yiyun Chen (Tsinghua University); Yihong Chen (University College London); Jing-Hao Xue (University College London); Wenming Yang (Tsinghua University); Qingmin Liao (Tsinghua Univeristy)

P5: Tuesday, July 7, 2020

P5: Multimedia Retrieval III

Time: 11:30 – 13:00
Chair: Chengcui zhang (The University of Alabama at Birmingham)

Paper
MutAtt: Visual-textual Mutual Guidance for Referring Expression Comprehension
Shuai Wang (College of Intelligence and Computing, Tianjin University); Fan Lyu (College of Intelligence and Computing, Tianjin University); Wei Feng (College of Intelligence and Computing, Tianjin University, China); Song Wang (University of South Carolina)
Dual Focus Attention Network For Video Emotion Recognition
Haonan Qiu (East China Normal University); Liang He (ECNU); Feng Wang (ECNU)
S3net: Graph Representational Network For Sketch Recognition
Lan Yang (Beijing University of Posts and Telecommunications); Aneeshan Sain (University of Surrey); Linpeng Li (Beijing University of Posts and Telecommunications); Yonggang Qi (Beijing University of Posts and Telecommunications); Honggang Zhang (Beijing University of Posts and Telecommunications); Yi-Zhe Song (University of Surrey)
Image retrieval based on multi-semantic region weighting and multi-scale flatness weighting
Zhuoyi Li (Yanshan University); Guanghua Gu (Yanshan University); Linjing Feng (Yanshan University); Jiangtao Liu (Yanshan University)
A Novel Convolutional Architecture for Video-Text Retrieval
Zheng Li (Beijing University of Posts and Telecommunications); Caili Guo (Beijing University of Posts and Telecommunications); Bo Yang (Beijing University of Posts and Telecommunications); Zerun Feng (Beijing University of Posts and Telecommunications); hao zhang (Beijing University of Posts and Telecommunications)
Stacked Convolutional Deep Encoding Network For Video-Text Retrieval
Rui Zhao (University of Science and Technology of China); Kecheng Zheng (University of Science and Technology of China); Zheng-Jun Zha (University of Science and Technology of China)
An Affinity-driven Relation Network for Figure Question Answering
Jialong Zou (School of Informatics Xiamen University); Guoli Wu (School of Informatics Xiamen University); Taofeng Xue (Institute of Software Chinese Academy of Sciences); Qingfeng Wu (School of Informatics Xiamen University)

P6: Wednesday, July 8, 2020

P6: Semantic Segmentation and Classification

Time: 11:30 – 13:00
Chair: Chengcui Zhang (The University of Alabama at Birmingham)

Paper
Web-Supervised Network for Fine-Grained Visual Classification
Chuanyi Zhang (Nanjing University of Science and Technology); Yazhou Yao (Nanjing University of Science and Technology); Jiachao Zhang (Nanjing Institute of Technology); Jiaxin Chen (Inception Institute of Artificial Intelligence); Pu Huang (Nanjing University of Posts and Telecommunications); Jian Zhang (UTS); Zhenmin Tang (Nanjing University of Science and Technology)
Occlusion-Aware GAN for Face De-Occlusion in the Wild
Jiayuan Dong (Nanjing University of Aeronautics and Astronautics); Liyan Zhang (Nanjing University of Aeronautics and Astronautics); Hanwang Zhang (Nanyang Technological University); Weichen Liu (Nanyang Technological University)
Iu-Module: Intersection And Union Module For Fine-Grained Visual Classification
Yixiao Zheng (Beijing University of Posts and Telecommunications); Dongliang Chang (Beijing University of Posts and Telecommunications); Jiyang Xie (Beijing University of Posts and Telecommunications); Zhanyu Ma (Beijing University of Posts and Telecommunications)
Semi-Supervised Semantic Segmentation Constrained By Consistency Regularization
Xiaoqiang Li (Shanghai University); Qin He (Shanghai University); Songmin Dai (Shanghai University); Pin Wu (Shanghai University); Weiqin Tong (Shanghai University)
Automatic detection of anatomical landmarks on geometric mesh data using deep semantic segmentation
Shu Liu (Central South University); Jia-Li He (Central South University); Sheng-Hui Liao (Central South University)
Open Set Semantic Segmentation with Statistical Test and Adaptive Threshold
Zhiying Cui (Sun Yat-sen University); Wu Longshi (Sun Yat-sen University); Ruixuan Wang (Sun Yat-sen University)

P7: Wednesday, July 8, 2020

P7: Multimedia for Society and Health I

Time: 11:30 – 13:00
Chair: Yinghuan Shi (Nanjing University)

Paper
Spectrally-Enforced Global Receptive Field for Contextual Medical Image Segmentation and Classification
Yongzhi Li (Beijing University); Lu Chi (Beijing University); Guiyu Tian (Beijing University); Yadong Mu (Beijing University); Shen Ge (Tencent Medical AI Lab); Zhi Qiao (Tencent); Xian Wu (Tencent Medical AI Lab); Wei Fan (Tencent)
Medical Image Super-Resolution via Res2Net Multi-scale network in NSCT Domain
Yu Sang (Liaoning Technical University); Jinguang Sun (); Simiao Wang (Liaoning Technical University); Keqiu Li (Dalian University of Technology); heng Qi (Dalian University of Technology)
HSI Road: A Hyper Spectral Image Dataset for Road Segmentation
Jiarou Lu (Nanjing University of Science and Technology); Huafeng Liu (NUST); Yazhou Yao (Nanjing University of Science and Technology); Shuyin Tao (Nanjing University of Science and Technology); Zhenmin Tang (Nanjing University of Science and Technology); Jianfeng Lu (Nanjing University of Science and Technology)
Learning Converse-level Multimodal Embedding to Assess Social Deficit Severity for Autism Spectrum Disorder
Chin-Po Chen (Department of Electrical Engineering, National Tsing Hua University); Susan Shur-Fen Gau (Department of Psychiatry, National Taiwan University Hospital and College of Medicine); Chi-Chun Lee (Department of Electrical Engineering, National Tsing Hua University)
S3F: A Multi-view Slow-Fast Network for Alzheimer's disease Diagnosis
Ziqiao Weng (The University at Buffalo); Jingjing Meng (State University of New York at Buffalo); Zhaohu Ding (Vanderbilt University); Junsong Yuan ("State University of New York at Buffalo, USA")

P8: Wednesday, July 8, 2020

P8: Object Recognition

Time: 11:30 – 13:00
Chair: Bingpeng Ma (University of Chinese Academy of Sciences)

Paper
Modeling Cross-view Interaction Consistency for Paired Egocentric Interaction Recognition
Zhongguo Li (Tianjin University); Fan Lyu (College of Intelligence and Computing, Tianjin University); Wei Feng (College of Intelligence and Computing, Tianjin University, China); Song Wang (University of South Carolina)
Skeleton-based Interactive Graph Network for Human Object Interaction Detection
Sipeng Zheng (Renmin University of China); Shizhe Chen (Renmin University of China); Qin Jin (Renmin University of China)
Contextual Adversarial Attacks for Object Detection
Hantao Zhang (EEIS Department, University of Science and Technology of China); Wengang Zhou (University of Science and Technology of China); Houqiang Li (University of Science and Technology of China)
Video Anomaly Detection Via Predictive Autoencoder With Gradient-Based Attention
Yuandu Lai (Tianjin University); Rui Liu (Tianjin University); Yahong Han (Tianjin University)
RANSP: Ranking Attention Network for Saliency Prediction on Omnidirectional Images
dandan zhu (Shanghai Jiao Tong University); yongqing chen (Hainan Air Traffic Management Sub-Bureau); Tian Han (Stevens Institute of Technology); defang zhao (tongji university); Yucheng Zhu (Shanghai Jiao Tong University); qiangqiang zhou (Shanghai University of Business); Guangtao Zhai (Shanghai Jiao Tong University); Xiaokang Yang (Shanghai Jiao Tong University of China)
Joint Detection, Re-Identification, And Lstm In Multi-Object Tracking
Wen-Jiin Tsai (National Chiao Tung University); Zih-Jie Huang (National Chiao Tung University); Chen-En Chung (National Chiao Tung)
Improved Traffic Sign Detection in Videos through Reasoning Effective RoI Proposals
Yanting Zhang (Beijing University of Posts and Telecommunications); Yonggang Qi (Beijing University of Posts and Telecommunications); Jie Yang (BUPT); Jenq-Neng Hwang (University of Washington)

P9: Wednesday, July 8, 2020

P9: Image/Video Enhancement III

Time: 11:30 – 13:00
Chair: Cagri Ozcinar (Trinity College Dublin)

Paper
Learning to See Faces in the Dark
Xin Ding (National Engineering Research Center for Multimedia Software, Wuhan University, China); Ruimin Hu (Wuhan University)
Attention-based network for low-light image enhancement
Cheng Zhang (Northwestern Polytechnical University); Qingsen Yan (Northwestern Polytechnical University); Yu Zhu (Northwestern Polytechnical University); Xianjun Li (Northwestern Polytechnical University); Jinqiu Sun (Northwestern Polytechnical University); Yanning Zhang (Northwestern Polytechnical University)
Rddan: A Residual Dense Dilated Aggregated Network For Single Image Deraining
Youzhao Yang (Fudan University); Wu Ran (Fudan University); Hong Lu (Fudan University)
Physical Model Guided Deep Image Deraining
Honghe Zhu (Dalian University of Technology); Cong Wang (Dalian University of Technology); Yajie Zhang (School of Computer Science and Technology, University of Chinese Academy of Sciences (UCAS)); Zhixun Su (Dalian University of Technology); Guohui Zhao (Dalian University of Technology)
Zero-shot Restoration of Underexposed Images via Robust Retinex Decomposition
Anqi Zhu (Tongji University); Lin Zhang (Tongji University, China); Ying Shen (Tongji University); Yong Ma (Jiangxi Normal University); Shengjie Zhao (Tongji University); Yicong Zhou (University of Macau)
An Efficient Pansharpening Method Based On Conditional Random Fields
Yong Yang (School of Information Technology, Jiangxi University of Finance and Economics); Hangyuan Lu (School of Information Technology, Jiangxi University of Finance and Economics); Shuying Huang (School of Software and Communication Engineering, Jiangxi University of Finance and Economics); Wei Tu (School of Information Technology, Jiangxi University of Finance and Economics)
An Edge Information and Mask Shrinking Based Image Inpainting Approach
HuaLi Xu (Inner Mongolia University); Xiangdong Su (Inner Mongolia University); Meng Wang (Inner Mongolia University); Xiang Hao (Inner Mongolia University); Guanglai Gao (Inner Mongolia University)

P10: Wednesday, July 8, 2020

P10: Machine Learning based Multimedia Applications and Technologies

Time: 11:30 – 13:00
Chair: Zheng Wang (National Institute of Informatics)

Paper
Peanet: The Products Of Experts Autoencoder For Abnormal Detection
Xinchao Zeng (East China Normal University); Chengwei Chen (East China Normal University); Chunyun Wu (East China Normal University); Haichuan Song (East China Normal University); Lizhuang Ma (East China Normal University)
Leveraging Deep Reinforcement Learning For Active Shooting Under Open-World Setting
Alexandros Tzimas (Aristotle University of Thessaloniki); Nikolaos Passalis (Aristotle University of Thessaloniki); Anastasios Tefas (Aristotle University of Thessaloniki)
Rethinking the PID Optimizer for Stochastic Optimization of Deep Networks
Lei Shi (Institute of Automation，Chinese Academy of Sciences); Yifan o Zhang (Institute of Automation, Chinese Academy of Sciences); Wanguo Wang (SGCC); Jian Cheng ("Chinese Academy of Sciences, China"); Hanqing Lu (NLPR, Institute of Automation, CAS)
Sparse Cnn Architecture Search (SCAS)
Yeshwanth V (Samsung Electronics); Ankur Deshwal (Samsung Electronics); Sundeep Krishnadasan (Samsung Electronics); Seungwon Lee (Samsung Electronics); Joonho Song (Samsung Electronics)
Sed-Net: Detecting Multi-Type Edits Of Images
Hongwei Xue (University of Science and Technology of China); Haomiao Liu (Beijing Huawei Digital Technologies Co., Ltd.); Jun Li (Beijing Huawei Digital Technologies Co., Ltd.); Houqiang Li (University of Science and Technology of China); Jiebo Luo (U. Rochester)
Low-frequency Guided Self-supervised Learning for High-fidelity 3D Face Reconstruction in the Wild
Pengrui Wang (Institute of Automation Chinese Academy of Sciences); Chunze Lin (Sense Time); Bo Xu (N/A); Che Wujun ("Institute of Automation, Chinese Academy of Sciences"); Quan Wang (Sensetime)
Learning intrinsic decomposition of complex-textured fashion images
Xiangyu Zhu (USTC); Xiaoguang Han (Shenzhen Research Institute of Big Data, the Chinese University of Hong Kong (Shenzhen)); Wei Zhang (Baidu Inc); Jian Zhao (Beijing University of Posts and Telecommunications); Ligang Liu (University of Science and Technology of China)

P11: Thursday, July 9, 2020

P11: Cross-modal and Multi-modal Media Analysis I

Time: 11:30 – 13:00
Chair: Qiang Ma (Kyoto University)

Paper
Video Captioning with Temporal and Region Graph Convolution Network
Xinlong Xiao (Fudan University); Yuejie Zhang (Fudan University); Rui Feng (Fudan University); Tao Zhang (Shanghai University of Finance and Economics); Shang Gao (Deakin University); Weiguo Fan (University of Iowa)
End-To-End Deep Multimodal Clustering
Xianchao Zhang (Dalian University of Technology); Jie Mu (Dalian University of Technology); Linlin Zong (Dalian University of Technology); Xiaochun Yang (Northeastern University)
ABP: Adaptive Body Partition Model for Visible Infrared Person Re-Identification
Ziyu Wei (Xidian University); Xi Yang (Xidian University); Nannan Wang (Xidian University); Bin Song (Xidian University); Xinbo Gao (Xidian University)
End-to-end method for Labanotation generation from continuous motion capture data
Ningwei Xie (Beijing Jiaotong University); Zhenjiang Miao (Beijing Jiaotong University); Jiaji Wang (Beijing Jiaotong University); Qiang Zhang (Beijing Jiaotong University)
Category-level Adversarial Self-ensembling for Domain Adaptation
Yukun Zuo (University of Science and Technology of China); Hantao Yao (Institute of Automation, Chinese Academy of Sciences); Changsheng Xu (CASIA)
Robust Bidirectional Generative Network for Generalized Zero-shot Learning
Yun Xing (Chongqing University); Sheng Huang (Chongqing University); Luwen Huangfu (Department of Management Information Systems, Fowler College of Business, San Diego State University); Feiyu Chen (Chongqing University); Yongxin Ge (Chongqing University)
Learning Discriminative Latent Features for Generalized Zero- and Few-Shot Learning
yijie huang (Northwestern Polytechnical University); zhenghong Deng (Northwestern Polytechnical University); tao wu (Northwestern Polytechnical University)

P12: Thursday, July 9, 2020

P12: Human Analysis III

Time: 11:30 – 13:00
Chair: Yongxin Ge (Chongqing University)

Paper
PS-RCNN: Detecting Secondary Human Instances in A Crowd via Primary Object Suppression
Zheng Ge (Waseda University); Zequn Jie (Tencent AI Lab); Xin Huang (Waseda University); Rong Xu (Waseda University); Osamu Yoshie (Waseda University)
TAO: A Trilateral Awareness Operation for Human Parsing
Enbo Huang (Sun Yat-sen university); Zhuo Su (Sun Yat-sen University); Fan Zhou (Sun Yat-sen university)
Person Re-identification via Pose-aware Multi-semantic Learning
Xiangzhong Luo (Nanyang Technological University); Luan H.K. Duong (Nanyang Technological University); Weichen Liu (Nanyang Technological University)
Unsupervised Domain Adaptation through Synthesis for Person Re-identification
Suncheng Xiang (Shanghai Jiao Tong University); Yuzhuo Fu (sjtu); Guanjie You (Shanghai Jiao Tong University); Ting Liu (Shanghai Jiao Tong University)
Self-Bootstrapping Pedestrian Detection in Downward-Viewing Fisheye Cameras Using Pseudo-Labeling
kaishi gao (Sun Yat-sen University); Qun Niu (Sun Yat-sen University); Haoquan You (Winner Technology Co., Inc.); Chengying Gao (Sun Yat-sen University)
Scale-Aware Rolling Fusion Network For Crowd Counting
Ying Chen (Sun Yat-sen University); Chengying Gao (Sun Yat-sen University); Zhuo Su (Sun Yat-sen University); Xiangjian He (University of Technology Sydney, Australia); Ning Liu (Sun Yat-sen University)
Context-Aware Generation-Based Net For Multi-Label Visual Emotion Recognition
Shulan Ruan (University of Science and Technology of China); Kun Zhang (Hefei University of Technology); Yijun Wang (University of Science and Technology of China); Hanqing Tao (University of Science and Technology of China (USTC)); Weidong He (University of Science and Technology of China); Guangyi Lv (USTC); Enhong Chen (University of Science and Technology of China)

P13: Thursday, July 9, 2020

P13: Multimedia Quality Assessment and Coding

Time: 14:30 – 16:00
Chair: Federica Battisti (University of Rome III)

Paper
Multitask Attentive Network for Text Effects Quality Assessment
KEQIANG YAN (Beijing University); Shuai Yang (Beijing University); Wenjing Wang (Beijing University); Jiaying Liu (Beijing University)
Blind stereoscopic image quality assessment by deep neural network of multi-level feature fusion
Jiebin Yan (Jiangxi University of Finance and Economics); Yuming Fang (Jiangxi University of Finance and Economics); Liping Huang (Jiangxi University of Finance and Economics); Xiongkuo Min (Shanghai Jiao Tong University); Yiru Yao (Jiangxi University of Finance and Economics); Guangtao Zhai (Shanghai Jiao Tong University)
Spatiotemporal Perception Aware Quantization Algorithm For Video Coding
Yunyao Yan (Beijing University); Guoqing Xiang (Beijing university); Yuan Li (Beijing University); Xiaodong Xie (Beijing University); Wei Yan (Beijing university); Yungang Bao (Chinese Academy of Sciences)
GAN-based Effective Bit Depth Adaptation for Perceptual Video Compression
Di Ma (University of Bristol); Fan Zhang (University of Bristol); David Bull (University of bristol)
Edge-directed Geometric Partitioning for Versatile Video Coding
Xuewei Meng (Beijing University); xinfeng zhang (University of Chinese Academy of Sciences); Chuanmin Jia (Beijing University); Xia Li (Beijing University Shenzhen Graduate School); Shanshe Wang (Beijing University); Siwei Ma (Beijing University, China)
Accelerating the VVC Decoder for Vector Length Agnostic SIMD Architectures
Yassin Kaddar (TU Berlin); Angela Pohl (TU Berlin); Ben Juurlink (TU Berlin)
Novel Analytical Models Of Face Recognition Accuracy In Terms Of Video Capturing And Encoding Parameters
Hayder R Hamandi (Wayne State University); Nabil Sarhan (Wayne State University)

P14: Thursday, July 9, 2020

P14: Multimedia Networking and Speech

Time: 14:30 – 16:00
Chair: Liping Chen (Microsoft Research Asia)

Paper
Speech Intelligibility Enhancement Using Non-Parallel Speaking Style Conversion with StarGAN and Dynamic Range Compression
Gang Li (Wuhan University); Ruimin Hu (Wuhan University); Shanfa Ke (Wuhan University); Rui Zhang (Wuhan University); Xiaochen Wang (Wuhan University); Li Gao (Wuhan University)
Autoregressive Model Based Smoothing Forensics Of Very Short Speech Clips
Sanshuai Cui (Sun Yat-sen University); Enlei Li (Sun Yat-sen University); Xiangui Kang (Sun Yat-Sen University)
A More Refined Mobile Edge Cache Replacement Scheme For Adaptive Video Streaming With Mutual Cooperation In Multi-Mec Servers
Xinyu Huang (Xi'an Jiaotong University); Lijun He (Xi'an Jiaotong University); xing chen (XI'AN JIAOTONG UNIVERSITY); Guizhong Liu (Xi'an Jiaotong University); Fan Li (Xi'an Jiaotong University)
Universal Adversarial Perturbations Generative Network for Speaker Recognition
Jiguo Li (Institute of Computing Technology, Chinese Academy of Sciences); xinfeng zhang (University of Chinese Academy of Sciences); Chuanmin Jia (Beijing University); Jizheng Xu (Bytedance Inc.); Li Zhang (Bytedance Inc.); Yue Wang (Beijing ByteDance Technology Co., Ltd.); Siwei Ma (Beijing University, China); Wen Gao (PKU)
Mipso: Multi-Period Per-Scene Optimization For Http Adaptive Streaming
Venkata Phani Kumar M (Alpen-Adria-Universität Klagenfurt); Christian Timmerer (Alpen-Adria-Universität Klagenfurt); Hermann Hellwagner (Alpen-Adria-Universität Klagenfurt)
Multi-Connectivity and Edge Computing for Ultra-Low-Latency Lifelike Virtual Reality
Jacob Chakareski (University of Alabama); Sabyasachi Gupta (UA)
Incremental Learning Algorithm for Sound Event Detection
Eunjeong Stella Koh (UC San Diego); Fatemeh Saki (Qualcomm); Yinyi Guo (Qualcomm); Cheng-Yu Hung (Qualcomm); Erik Visser (Qualcomm)

P15: Thursday, July 9, 2020

P15: Video Analysis

Time: 14:30 – 16:00
Chair: Junlin Hu (Beijing University of Chemical Technology)

Paper
Follow the Curve: Arbitrary Oriented Scene Text Detection with Key Points Spotting and Curve Prediction
Ke Yuan (Beijing University); dafang he (The Penn State University); Xiao Yang (Pennsylvania State University); Zhi Tang (Beijing University); Daniel Kifer (Penn State); C Lee Giles (Pennsylvania State)
Beyond without Forgetting: Multi-Task Learning for Classification with Disjoint Datasets
Yan Hong (Shanghai Jiao Tong University); Li Niu (Shanghai Jiao Tong University); Jianfu Zhang (Shanghai Jiao Tong University); Liqing Zhang (Shanghai Jiao Tong University)
Locally Structured Multi-Task Multi-Kernel Tracker
baojie fan (njupt)
Real-Time Tracking Of Vehicles With Siamese Network And Backward Prediction
Ao Li (Chongqing University of Posts and Telecommunications); Lei Luo (Chongqing University of Posts and Telecommunications); Shu Tang (Chongqing University of Posts and Telecommunications)
Small Components Parsing Via Multi-Feature Fusion Network
Zhiying Leng (Beihang University); Yang Lu (Beihang University); Xiaohui Liang (State Key Laboratory of Virtual Reality Technology and Systems, Beihang University)
Scaling DNN-based Video Analysis by Coarse-grained and Fine-grained Parallelism
Phanwadee Sinthong (University of California, Irvine); Kanak Mahadik (Adobe Research); Somdeb Sarkhel (Adobe); Saayan Mitra (Adobe)

P16: Thursday, July 9, 2020

P16: Emerging Multimedia Applications and Techniques

Time: 14:30 – 16:00
Chair: Ivan Bajic (Simon Fraser University)

Paper
A Study of Parking-slot Detection with the Aid of Pixel-level Domain Adaptation
Juntao Chen (Tongji University); Lin Zhang (Tongji University, China); Ying Shen (Tongji University); Yong Ma (Jiangxi Normal University); Shengjie Zhao (Tongji University); Yicong Zhou (University of Macau)
Double Shot: Preserve and Erase Based Class Attention Networks for Weakly Supervised Localization (PECA-Net)
lishu luo (Tsinghua University); Chun Yuan (Graduate school at ShenZhen，Tsinghua university); ke zhang (Tsinghua University); Yong Jiang (Tsinghua University); Yuwei Zhang (Tsinghua University); Honglei Zhang (Georgia Institute of Technology)
Reconstructing Part-level 3D models from a Single Image
Dingfeng Shi (Beihang University); Yifan Zhao (Beihang University); Jia Li (Beihang University)
RGBD-FG: A Large-Scale RGB-D Dataset for Fine-Grained Categorization
Yanhao Tan (University of Chinese Academy of Sciences); Ke Lu (University of Chinese Academy of Sciences); Mohammad Muntasir Rahman (University of Chinese Academy of Sciences); Jian Xue (University of Chinese Academy of Sciences)
McShips: A Large-Scale Ship Dataset for Detection and Fine-Grained Categorization in the Wild
Yitong Zheng (Northwestern Polytechnical University); Shun Zhang (Northwestern Polytechnical University, China)
Phrase-level Global-local Hybrid Model for Sentence Embedding
Mingyu Tang (University of Science and Technology of China); Liansheng Zhuang (University of Science and Technology of China); Houqiang Li (University of Science and Technology of China); Jian Yang (Northern Institute of Electronic Equipment); Yanqun Guo (Southwest Jiaotong University)
Attention Meets Normalization and Beyond
Xu Ma (University of North Texas); Jingda Guo (University of North Texas); Qi Chen (University of North Texas); Sihai Tang (University of North Texas); Qing Yang (University of North Texas); Song Fu (University of North Texas)

P17: Thursday, July 9, 2020

P17: Image/Video Synthesis and Generation

Time: 14:30 – 16:00
Chair: Chee Seng Chan (University of Malaya)

Paper
MoFlowGAN: Video Generation with Flow Guidance
Wei Li (Shanghai Jiao Tong University); Zehuan Yuan (Bytedance.Inc); Xiangzhong Fang (Shanghai Jiao Tong University); Changhu Wang (ByteDance.Inc)
Fine-Grained Garment Parsing: A Body Generation Approach
Peng Zhang (Tsinghua University); Yuwei Zhang (Tsinghua University); Shan Huang (Tsinghua University); Zhi Wang (Tsinghua University)
Cascaded Detail-Aware Network For Unsupervised Monocular Depth Estimation
Xinchen Ye (Dalian University of Technology); Mingliang Zhang (Dalian University of Technology); Xin Fan (Dalian University of Technology); Rui Xu (Dalian University of Techonology); Juncheng Pu (Dalian University of Technology); Ruoke Yan (Dalian University of Technology)
Deep Prior Guided Network for High-quality Image Fusion
Jia-Li Yin (Yuan Ze University); Bo-Hao Chen (Yuan Ze University); Yan-Tsung Peng (National Chengchi University); Chung-Chi Tsai (Qualcomm Technology)
Cascade Detector with Feature Fusion for Arbitrary-Oriented Objects in Remote Sensing Images
Liping Hou (University of Chinese Academy of Sciences); Ke Lu (University of Chinese Academy of Sciences); Jian Xue (University of Chinese Academy of Sciences); Li Hao (University of Chinese Academy of Sciences)
Generating Future Frames with Mask-Guided Prediction
Qian Wu (Beijing University); Xiongtao Chen (Beijing University); Zhongyi Huang (School of Electronic and Computer Engineering, Beijing University); Wenmin Wang (Beijing University)
Human Action Image Generation with Differential Privacy
Mingxuan Sun (Louisiana State University); Qing Wang (Louisiana State University); Zicheng Liu (Microsoft)

P18: Thursday, July 9, 2020

P18: Super-resolution

Time: 14:30 – 16:00
Chair: Jie Chen (Hong Kong Baptist University)

Paper
Semantic attention adaptation network for face super-resolution
Tianyu Zhao (Tianjin University); Changqing Zhang (Tianjin university)
DSR: An Accurate Single Image Super Resolution Approach for Various Degradations
Yiqun Mei (University of Illinois); Yue Zhao (Carnegie Mellon University); Wei Liang (University of Illinois at Urbana-Champaign)
Unsupervised Deep Hyperspectral Super-resolution with Unregistered Images
Jiangtao Nie (Northwestern Polytechnical University); Lei Zhang (Northwestern Polytechnical University); Wei Wei (Northwestern Polytechnical University); Chen Ding (Xi'an University of Posts and Telecommunications); Yanning Zhang (Northwestern Polytechnical University)
Multi-Context and Enhanced Reconstruction Network for Single Image Super Resolution
Jiqing Zhang (Dalian University of Technology); Chengjiang Long (Kitware Inc); Yuxin Wang (Dalian University of Technology); Xin Yang (Dalian University of Technology); Haiyang Mei (Dalian University of Technology); Baocai Yin (Dalian University of Technology)
MGHCNet: A Deep Multi-scale Granular and Holistic Channel Feature Generation Network for Image Super Resolution
Alireza Esmaeilzehi (Concordia University); M. Omair O Ahmad (Concordia University); M.N.S. Swamy (Concordia University)
SRNMFRB: A Deep Light-weight Super Resolution Network using Multi-receptive Field Feature Generation Residual Blocks
Alireza Esmaeilzehi (Concordia University); M. Omair O Ahmad (Concordia University); M.N.S. Swamy (Concordia University)

Collaborative Research Projects

Tuesday, July 7, 2020

Collaborative Research Projects

Time: 11:30 – 13:00
Chair: Alberto Rabbachin (European Commission, Brussels, Belgium)

Paper
The Hyper360 Toolset for Enriched 360˚ Video
Hannes Fassold (Joanneum Research); Antonis Karakottas (CERTH / CENTRE FOR RESEARCH AND TECHNOLOGY HELLAS); Dimitrios Zarpalas (CERTH / CENTRE FOR RESEARCH AND TECHNOLOGY HELLAS); Dorothea Tsatsou (CERTH); Barnabas Takacs (Digital Elite/PanoCAST); Christian Fuhrhop (Fraunhofer FOKUS); Angelo Manfredi (Engineering); Nicolas Patz (Rundfunk Berlin-Brandenburg); Simona Tonoli (Mediaset); Iana Dulskaia (Eurokleis)
Physical Security Detectors for Critical Infrastructures Against New-age Threat of Drones and Human Intrusion
Xindi Zhang (Queen Mary University of London); Krishna Chandramouli (Venaka Media Limited); Dusan Gabrijelcic (Institut Joseph Stefan); Theodore Zahariadis (University of Athens); Gabriele Giunta (ENGINEERING)
Analysis of Artistic Styles in Oil Painting Using Deep-Learning Features
Bingqing Guo (Queen Mary University of London); Pengwei Hao (Queen Mary University of London)
WeVerify: Wider and Enhanced Verification for You. Project Overview and Tools
Zlatina Marinova (Sirma AI, trading as Ontotext); Jochen Spangenberg (Deutsche Welle); Denis Teyssou (Agence France Presse); Symeon Papadopoulos (Information Technologies Institute / Centre for Research & Technology - Hellas, GR); Nikos Sarris (ATC); Alexandre Alaphilippe (EU DisInfo Lab); Kalina Bontcheva (University of Sheffield, UK)
Distortion-Free Video Stabilization
Maria Silvia Ito (Queen Mary University of London UK); Ebroul Izquierdo (Queen Mary University of London)
A Prototype Deep Learning Paraphrase Identification Service For Discovering Information Cascades In Social Networks
Panagiotis Kasnesis (University of West Attica); Ryan Heartfield (University of Greenwich); Lazaros Toumanidis (UNIWA); Xing Liang (University of Greenwich); George Loukas (University of Greenwich); Charalampos Patrikakis (University of West Attica)

Industry Application Papers

Tuesday, July 7, 2020

Industry Application Papers

Time: 11:30 – 13:00
Chair: Sebastiaan Van Leuven (Twitter, UK)

Paper
Image Dynamic Range Enhancement based on Fusion Pyramid
Shupei Zhang (University of Alberta); Charles Euler (Huawei); Anup Basu (University of Alberta, Canada)
Color Balanced Histogram Equalization for Image Enhancement
Prem Raheja (University of Alberta); Utkarsh Vashisth (University of Alberta); Jatin Dawar (University of Alberta); Irene Cheng (University of Alberta); Anup Basu (University of Alberta, Canada)
An Industry-Ready Single Ptz-Camera Based Attendance Management System
Yuchunxiao Su (Ping An Life Insurance Company of China, Ltd)
A Multimodal Fusion Framework for Brand Recognition from Product Image and Context
Changbo Hu (Microsoft); Qun Li (Microsoft); Ruofei Zhang (Microsoft); Keng-hao Chang (Microsoft)
Analytic Simplification of Neural Network based Intra-Prediction Modes for Video Compression
Maria Santamaria (Queen Mary University of London); Saverio Blasi (BBC); Ebroul Izquierdo (Queen Mary University of London); Marta Mrak (BBC)

Demo Sessions

Thursday, July 9, 2020

Demo Session 1

Time: 11:30 – 13:00
Chair: Saverio Blasi (BBC- British Broadcasting Corporation)

Paper
Calligraphy Navigation System for Blind People based on Visual Prosthesis on Waist Belt
Hang Liu (East China Normal University); Menghan Hu (East China Normal University); Guodong Li (East China Normal University); Qingli Li (East China Normal University); Xiaofeng Zhou (East China Normal University); Jian Zhang (East China Normal University); Guangtao Zhai (Shanghai Jiao Tong University)
Portable health screening device of respiratory infections
Zheng Jiang (Shanghai Jiaotong University); Menghan Hu (East China Normal University); Guangtao Zhai (Shanghai Jiao Tong University)

Thursday, July 9, 2020

Demo Session 2

Time: 11:30 – 13:00
Chair: Eduardo Peixoto (Universidade de Brasılia)

Paper
A Real-Time Police Dog Action Recognition System based on Vision and IMU Sensors
Xiaoman Zhan (Hohai University); Qian Huang (Hohai University); Chaozheng Zhu (Hohai University); Guangyun Liu (Nanjing Huiying Electronics Technology Corporation)
AutoSoccer: An Automatic Soccer Live Broadcasting Generator
Chunyang Li (School of Computer and Information Technology,Beijing Jiaotong University); Zhineng Chen (Institute of Automation, Chinese Academy of Sciences); Caiyan Jia (School of Computer and Information Technology & Beijing Key Lab of Traffic Data Analysis and Mining,); Hongyun Bao (Institute of Automation, Chinese Academy of Sciences); Changsheng Xu (CASIA)

Thursday, July 9, 2020

Demo Session 3

Time: 11:30 – 13:00
Chair: Christian Timmerer (Alpen-Adria-Universität Klagenfurt)

Paper
A Real-time AVS3 8K UHD Encoding and Decoding System
Huiwen Ren (Beijing University); Bo Jiang (Beijing Boya RealScene Technologies Co., Ltd); Falei Luo (Beijing Boya RealScene Technologies Co., Ltd); Jing Li (Intel Asia-Pacific Research \& Development Ltd); Yong Chen (Hangzhou Arcvideo Technology Co., Ltd.); Shanshe Wang (Beijing Boya RealScene Technologies Co., Ltd); Siwei Ma (Beijing University, China); Wen Gao (PKU)
FVV Live: real-time, low-cost, free viewpoint video
Daniel Berjón (Universidad Politécnica de Madrid); Pablo Carballeira (Universidad Politécnica de Madrid); Julian Cabrera (Universidad Politecnica de Madrid); Carlos Carmona (Universidad Politécnica de Madrid); Daniel Corregidor (Universidad Politécnica de Madrid); César Díaz (UPM); Francisco Morán (Universidad Politécnica de Madrid); Narciso García (Universidad Politécnica de Madrid)

Thursday, July 9, 2020

Demo Session 4

Time: 11:30 – 13:00
Chair: Saverio Blasi (BBC- British Broadcasting Corporation)

Paper
An Immersive Video Experience with Real-Time View Synthesis Leveraging the Upcoming Miv Distribution Standard
Bertrand Chupeau (InterDigital)
Working towards transparent application of machine learning in video processing
Luka Murn (BBC), Marc Gorriz Blanch (BBC), Maria Santamaria (BBC), Fiona Rivera (BBC), Marta Mrak (BBC)

ICME 2020 Activities, Networking & Workshops

Workshops

W1: Monday, July 6, 2020

W1: AVS3 Video Coding Standard

Time: 09:00 – 16:30
Organisers: Siwei Ma, Beijing University, China
               Lu Yu, Zhejiang University, China
               Xiaozhen Zheng, DJI, China
               Li Zhang, Bytedance, USA
               Shan Liu, Tencent America, USA

Description

AVS3 is the latest video coding standard developed by China AVS workgroup, targeting the emerging 4K/8K and VR applications. Till now, AVS3 has adopted many new efficient video coding tools, such as extended quad-tree block partitions, boundary filter for intra prediction, and flexible reference picture list management scheme. AVS3 shows significant coding gain over the previous video coding standards. Recently, Hisilicon has announced the first AVS3 8K@120p decoder chip at IBC2019. Moreover, AVS3 also did much exploration work in deep learning-based compression, where both piecemeal and end-to-end approaches were studied. This workshop aims at bringing together academic researchers, industrial practitioners, and individuals working on this emerging exciting research area to disseminate their new ideas, latest findings, and state-of-the-art results related to AVS3 developments.

Scope and Topics

Topics of interest include, but are not limited to:

- Coding tools
- Software/hardware implementations
- System transport
- Quality evaluation
- Learning based image/video compression

Session 1

Session Chairs: Siwei Ma (Beijing University) and Xiaozhen Zheng (Singhua Shenzhen International Graduate School)

Time	Paper
09:00	**Performance Evaluation For AVS3 Video Coding Standard** *Xiaozhen Zheng[1,2], Qingmin Liao[1], Yueming Wang[2], Ze Guo[2], Jianglin Wang[2], Yan Zhou[2] ([1]Tsinghua Shenzhen International Graduate School, [2]SZ DJI Technology Co., Ltd)*

Time	Paper
09:20	**Performance And Computational Complexity Analysis Of Coding Tools In Avs3**
	Kui Fan[1], Yangang Cai[1], Xuesong Gao[2], Weiqiang Chen[2], Shengyuan Wu[1], Zhenyu Wang[1], Ronggang Wang[1],Wen Gao[1], ([1]Beijing University Shenzhen Graduate School, [2]Hisense Co. Ltd.)
09:40	**Prediction With Multi-Cross Component**
	Junru Li[1], Li Zhang[2], Kai Zhang[2], Hongbin Liu[2], Meng Wang[3], Shiqi Wang[3], Siwei Ma[1], Wen Gao[1], ([1]Beijing University, [2]Bytedance Inc., [3]City University of Hong Kong)
10:00	**Adaptive Motion Vector Resolution In AVS3 Standard**
	Chuan Zhou[1], Zhuoyi Lv[1], Yinji Piao[1],Yue Wu[1], Kiho Choi[2], Kwang Pyo Choi[2], ([1]Samsung Research China, [2]Samsung Electronics)
10:20	**Coffee Break**
10:40	**Affine Direct/Skip Mode With Motion Vector Differences In Video Coding**
	Tianliang Fu[1], Kai Zhang[2], Hongbin Liu[2], Li Zhang[2], Shanshe Wang[1], Siwei Ma[1], Wen Gao[1], ([1]Beijing University, [2]Bytedance Inc.)
11:00	**Implicit-Selected Transform In Video Coding**
	Yuhuai Zhang[1], Kai Zhang[2], Li Zhang[2], Hongbin Liu[2], Yue Wang[2], Shanshe Wang[1], Siwei Ma[1], Wen Gao[1] ([1]Beijing University, [2]Bytedance Inc.)
11:20	**Scan Region-Based Coefficient Coding In AVS3**
	Zhuoyi Lv[1], Yinji Piao[2], Yue Wu[1], Kiho Choi[2], Kwang Pyo Choi[2] ([1]Samsung Research China, [2]Samsung Electronics)
11:40	**Intra Block Copy In AVS3 Video Coding Standard**
	Yingbin Wang, Xiaozhong Xu, Shan Liu (Tencent)
12:00	**History Based Block Vector Predictor For Intra Block Copy**
	Wenbin Yin[1], Jizheng Xu[2], Li Zhang[2], Kai Zhang[2], Hongbin Liu[2], Xiaopeng Fan[1] ([1]Harbin Institute of Technology, [2]Bytedance Inc.)

Session 2

Session Chairs: Siwei Ma (Beijing University) and Li Zhang (Bytedance Inc.)

Time	Paper
14:00	**UAVS3D - Fast Multi-Platform And Open Source Decoder For AVS3**
	Jiang Du, Zhenyu Wang, Bingjie Han, Ronggang Wang (Shenzhen Graduate School, Beijing University)
14:20	**GPU Based Real-Time Uhd Intra Decoding For AVS3**
	Xu Han[1], Bo Jiang[2], Shanshe Wang[2], Lin Li[3], Yi Su[3], Siwei Ma[2], Wen Gao[2] ([1]Shanghai Jiao Tong University, [2] Beijing University, [3] MIGU Co.,Ltd)
14:40	**Inheritability-Inspired Intra Coding Optimization For AVS3**

Time	Paper
	Jiaqi Zhang[1], Xuewei Meng[1], Chuanmin Jia[1], Yi Su[2], Song Xu[2], Shanshe Wang[1], Siwei Ma[1], Wen Gao[1] ([1]Beijing University, [2]MIGU Co.,Ltd)
15:00	Coffee Break
15:20	**Residual Convolutional Neural Network Based In-Loop Filter With Intra And Inter Frames Processed Respectively For AVS3**
	Han Zhu, Xiaozhong Xu, Shan Liu (Tencent)
15:40	**Deep Learning Based Intra Prediction Filter In AVS3**
	Chentian Sun, Xiaopeng Fan, Debin Zhao (Harbin Institute of Technology)
16:00	**CNN-Based Inter Prediction Refinement For AVS3**
	Zhicong Zhang[1], Xiaopeng Fan[1], Debin Zhao[1], Wen Gao[2] ([1]Harbin Institute of Technology, [2]Beijing University)

W2: Monday, July 6, 2020

W2: Workshop on ICT and Multimedia Tools for Migrants Inclusion in Host Societies (WIMMIH2020)

Time: 11:00 – 12:30

Organisers: Dr Petros Daras, Centre for Research and Technology Hellas (CERTH), Greece

Dr Nicholas Vretos, Centre for Research and Technology Hellas (CERTH), Greece

Prof. Federico Alvarez, Universidad Politecnica de Madrid (UPM), Spain

Dr Theodoros Semertzidis, Centre for Research and Technology Hellas (CERTH), Greece

Prof. Yuri Adrian Tijerino, Kwansei Gakuin University, Japan

Description

Migrants integration into host societies pose many challenges in different levels. From job seeking to education enrolling and from asylum seeker to vulnerable refugees, the spectrum of different tools that can be created to assist these people and host authorities is vast. Multimedia ICT solutions have been devised in order to cope with many of these issues. Artificial Intelligence (AI) and Machine Learning (ML) tools have been used thus far to assist migrants and host authorities to provide better services for the benefit of both migrants and host societies. It is evident that migration flows rise due to regional conflicts and/or environmental conditions shifting and that new tools need to be researched and develop to assist societies towards a smooth integration of these people to the host societies. In this volatile, intercultural, landscape and with the need to support many different languages, illiteracy problems, and lack of technology skills, multimedia approaches that reduce the need of written communication appear to be the most effective ones.

The aim of this workshop is to call for a coordinated effort to understand the scenarios and the challenges emerging in ICT solutions for migrants' inclusion into host societies with AI and ML based Multimedia tools, identify the key tasks and evaluate the current state of the art in the specific domain. Moreover, this workshop will try to showcase innovative ideas in the area that aid on the smooth integration of migrants into host societies and discuss further directions. We solicit manuscripts in all fields that explore the synergies of Multimedia tools and AI, ML, towards the assistance of migrants and host authorities for a smooth inclusion of the former in a host society.

Scope and Topics

We believe the workshop will offer a timely collection of research updates to benefit the researchers and practitioners working in the broad fields ranging from computer vision, artificial intelligence and machine learning, with emphasis on multimedia related solutions. To this end, we solicit original research and survey papers addressing the topics listed below (but not limited to):

- AI technologies for multimedia game-based skill assessment;
- AI technologies for video and image-based migration flow analysis;
- AI technologies for skill-job matching;
- AI technologies for video and image-based migration flow prediction;
- AI technologies for automatic administrative multimedia-based assistance;
- AI technologies for multimedia based intercultural communication assistance;

- Data analytics and demo systems for large scale job seeking services;
- Migration related multimedia datasets and evaluation protocols;
- AI-assisted or human-AI co-operated technologies for administrative multimedia-based assistance;
- Emerging new applications in Multimedia ICT Tools for Migrant Inclusion in host societies;

Schedule

Session Chair: Dr. Nicholas Vretos (Centre for Research and Technology Hellas)

Time	Paper
11:00	**Immerse: A Personalized System Addressing The Challenges Of Migrant Integration**
	Dimos Ntioudis[1], Eleni Kamateri[1], Georgios Meditskos[1], Anastasios Karakostas[1], Florian Huber[2], Romeo Bratska[3], Stefanos Vrochidis[1], Babak Akhgar[4], Ioannis Kompatsiaris[1] ([1]Information Technologies Institute - Centre for Research and Technology Hellas, [2]SYNYO GmbH, [3]ADITESS, [4]Sheffield Hallam University)
11:20	**Nadine-Bot: An Open Domain Migrant Integration Administrative Agent**
	Athanasios Lelis, Nicholas Vretos, Petros Daras (Information Technologies Institute, Centre for Research and Technology Hellas)
11:40	**A Novel Multi-Modal Framework For Migrants Integration Based On AI Tools And Digital Companions**
	David Martın-Gutierrez[1], Gustavo Hernandez-Penaloza[1], Theodoros Semertzidis[2], Francisco Moreno[1], Michalis Lazaridis[2], Federico Alvarez[1], Petros Daras[2] ([1]Universidad Politecnica de Madrid, [2]Centre for Research and Technology Hellas)
12:00	**Coffee Break**
12:10	**Embracing Novel ICT Technologies To Support The Journey From Camp To Job**
	Helen C. Leligou[1], Despina Anastosopoulos[1], Anita Montagna[2], Vassilis Solachidis[3], Nicholas Vretos[3] ([1]INTRASOFT International, [2]Information Technologies Institute, Center for Research and Technology Hellas, [3]Centro Studi Pluriversum)

W3: Monday, July 6, 2020

W3: The 1st International Workshop on Interactive Multimedia Retrieval

Time: 11:00 – 12:30
Organisers: Werner Bailer, Joanneum Research, Austria
                Klaus Schoeffmann, Klagenfurt University, Austria
                Luca Rossetto, University of Zurich, Switzerland
                Jakub Lokoč, Charles University, Czech Republic

Description

With the recent increase in both volume and diversity of multimedia data, effective browsing and retrieval methods become increasingly important in order to deal with the available data and find the relevant documents. While this problem is well understood for textual documents, where an information need can often be expressed in sufficient detail with a textual query, the effective search in multimedia documents is generally more difficult. The 1st International Workshop on Interactive Multimedia Retrieval calls for submissions related to interactive retrieval in and across all types of multimedia content.

Scope and Topics

We invite submissions reporting on current work done in the context of e.g., the Video Browser Showdown or the Lifelog Search Challenge, as well as interactive variants of solutions to TRECVID, MediaEval or similar tasks. Submissions should describe methods, but also insights and lessons learned from participating in such benchmarks. In this context, contributions related (but not limited) to the following topics are invited:

- Interactive Retrieval Approaches and Methods, Cross/Multi-Modal Retrieval Methods
- Browsing and Interactive Search User Interfaces
- Understanding User Behaviour and Information Needs
- Datasets, Evaluation Metrics and Protocols
- Multimedia Indexing and Video Summarization Methods
- Interactive Multimedia System Design and Architecture

Schedule

Time	Paper
11:00	**Deep Learning Classification with Noisy Labels**
	Guillaume Sanchez, Vincente Guis, Ricard Marxer, Frédéric Bouchara (University of Toulon)
11:20	**A Text-Guided Graph Structure For Image Captioning**
	Depeng Wang, Zhenzhen Hu, Yuanen Zhou, Xueliang Liu, Le Wu, Richang Hong (Hefei University of Technology)

Time	Paper
11:40	**Deep Semantic Adversarial Hashing Based On Autoencoder For Large-Scale Cross**
	Mingyong Li, Hongya Wang (Donghua university)
12:00	**Multi-Stage Queries and Temporal Scoring In Vitrivr**
	Silvan Heller[1], Loris Sauter[1] Heiko Schuldt[1], Luca Rossetto[2] ([1]Basel University, [2]Zürich University)

W4: Monday, July 6, 2020

W4: Tools for Creating XR Media Experiences

Time: 14:00 – 17:20

Organisers: Hannes Fassold, Joanneum Research, Austria

Antonis Karakottas (Centre for Research & Technology Hellas)

Pablo Cesar, Centrum Wiskunde & Informatica and Delft University of Technology, Netherlands

Mario Montagud, i2CAT & University of Valencia, Spain

Description

Extended Reality (XR), which includes Virtual Reality (VR), Augmented Reality (AR) and mixed reality (MR), creates entirely new ways for consumers to experience the world around them and interact with it. Within the last few years, improvements in sensor technology and processing power have led to tremendous advances in all aspects of XR hardware, and due to economies of scale of the massively growing XR market these devices are available now at a reasonable price point. On the production side, powerful low-cost systems for capturing 3D objects and volumetric video and 360˚ videos make it possible to create budget VR/AR productions. The same applies to the consumption side, where VR headsets like the Oculus Go or Playstation VR provide a highly immersive VR experience which is affordable for everyone.

Unfortunately, the development of tools and technologies for authoring, processing and delivering interactive XR experiences is lagging considerably behind the hardware development, which is definitely a hurdle for the cost-effective mass production of appealing XR content and scenarios. Lack of content in turn hinders broader adoption and acceptance of XR technologies by the consumer. For all these aspects, new approaches and technologies are needed in order to overcome the specific challenges of XR content creation (multimodal data, non-linear interactive storytelling, annotation and metadata models, novel compression techniques, bandwidth requirements, etc.).

This workshop asks for original contributions on new approaches, technologies and tools for creating, processing and delivering interactive XR media (3D/CGI content/point clouds, 360˚ video, 3DoF+/6DoF video, volumetric video, spatial audio…).

Scope and Topics

Topics of particular interest include, but are not limited to:

- Efficient XR content acquisition and representation.
- Compression and delivery to various platforms (HMD, smartphones, SmartTV / HbbTV, Web, …)
- Subjective and objective assessment of XR scenarios (content quality, experiences…).
- Semantic understanding of XR content (depth estimation, semantic segmentation, object recognition, pose estimation, action recognition, audio analysis, etc.).
- Automating the XR content authoring process (e.g. providing automatic content annotation / storytelling)
- Authoring interactions and navigation aids (e.g., elements for moving in time and space, avatars)

- Authoring accessible XR experiences (e.g. subtitles, audio description, audio subtitling, sign language, …)

Time	Paper/Talk
14:00	**Welcome Message from the Workshop Organisers**
14:05	**Keynote: "Volumetric Video Content Creation for Immersive AR/VR Experiences:**
	Professor Aljosa Smolic (Trinity College Dublin)
	Coffee Break
15:10	**XR360: A Toolkit For Mixed 360 And 3D Productions**
	Antonis Karakottas, Nikolaos Zioulis, Alexandros Doumanglou, Vladimiros Sterzentsenko, Vasileios Gkitsas, Dimitrios Zarpalas, Petros Daras (Centre for Research and Technology Hellas)
15:30	**An Authoring Model For Interactive 360 Videos**
	Paulo R. C. Mendes[1], Alan L. V. Guedes[1], Daniel de S. Moraes[1], Roberto G. A. Azevedo[2], Sergio Colcher[1] ([1]Pontifical Catholic University of Rio de Janeiro, [2]Ecole Polytechnique Federale de Lausanne)
15:50	**Towards Neural AR: Unsupervised Object Segmentation With 3D Scanned Model Through ReLaTIVE**
	Zackary P. T. Sin, Peter H. F. Ng, Hong Va Leong (Hong Kong Polytechnic University)
16:10	**Coffee Break**
16:20	**Simplifying The Process Of Creating Augmented Outdoor Scenes**
	Ribin Chalumattu, Simone Schaub-Meyer, Robin Wiethuchter, Severin Klingler, Markus Gross (ETH Zurich)
16:40	**Interactive 360 Narrative For TV Use**
	Christian Fuhrhop[1], Louay Bassbouss[1], Nico Patz[2] ([1]Fraunhofer FOKUS, [2]RBB)
17:00	**Invited Talk: XR4ALL Project: "XR4ALL - Moving The European XR Tech Industry Forward"**
	Leen Segers (Lucidweb)

W5: Monday, July 6, 2020

W5: Multimedia Services and Technologies for Smart-Health (MUST-SH 2020)

Time: 14:00 – 17:00
Organisers: M. Shamim Hossain, King Saud University, KSA
               Stefan Goebel, KOM, TU Darmstadt, Germany

Steering Committee

- Changsheng Xu, Multimedia Computing Group, Chinese Academy of Sciences, China (co-chair)
- Abdulmotaleb El Saddik, University of Ottawa, Ottawa, Canada (co-chair)
- Min, Chen, Huazhong University of Science and Technology (HUST), China
- Mohsen Guizani, EiC IEEE Network
- Athanasios Vasilakos, Lulea University of Technology, Sweden

Technical Chair

- Susan Malaika, IBM, USA
- Md. Abdur Rahman, UPM, Saudi Arabia

Program Committee

- Robert Istepanian, Kingston University, UK
- Zheng Chang, University of Jyväskylä, Finland
- Min, Chen, Huazhong HUST, China
- Athanasios Vasilakos, Lulea University of Technology, Sweden
- Tom Baranowski, Baylor College of Medicine, USA
- Stefan Goebel, Multimedia Communications Lab (KOM), TU Darmstadt, Germany
- Yin Zhang, Zhongnan University of Economics and Law, China
- Syed M. Rahman, University of Hawai, USA
- Biao Song, Kyung Hee University, South Korea
- Mukaddim Pathan, Australian National University, Australia
- Gamhewage Chaminda de Silva, University of Tokyo, Japan
- Kaoru Sezaki, University of Tokyo, Japan
- Manzur Morshed, Monash University, Australia
- Edward Delp, Purdue University, USA
- Majdi Rawashdeh, New York University, UAE
- Muhammad Ghulam, CCIS, King Saud University, KSA
- Abdur Rahman, SITE, University of Ottawa, Canada
- Al-Sakib Khan Pathan, IIUM, Malaysia
- Jorge Parra, Ikerlan-IK4, Spain
- Nada Philip, Kingston University, UK
- Md. Mehedi Masud, Taif University, KSA
- Mehedi Hassan, Kyung Hee University, South Korea
- Atif Shamim, King Abdullah University Of Science & Technology, KSA
- Josef Wiemeyer, TU Darmstadt, Germany
- Lennart Nacke, University of Saskatchewan, Canada
- Anders Drachen, AGORA Informatics, Denmark

- Georgios Yannakakis, IT University of Kopenhagen, Denmark
- Simon McCallum, Gjøvik University College, Hedmark, Norway

Description

Today multimedia services and technologies play an important role in providing and managing smart healthcare services to anyone, anywhere and anytime seamlessly. These services and technologies facilitate doctors and other health care professionals to have immediate access to smart-health information for efficient decision making as well as better treatment. Researchers are working in developing various multimedia tools, techniques and services to better support smart - health initiatives. In particular, works in smart-health record management, elderly health monitoring, real-time access of medical images and video are of great interest.

Scope and Topics

This workshop aims to report high quality research on recent advances in various aspects of smart health, more specifically to the state-of-the-art approaches, methodologies and systems in the design, development, deployment and innovative use of multimedia services, tools and technologies for smart health care. Authors are solicited to submit complete unpublished papers in the following, but not limited to the following topics of interest:

- Edge-Cloud for Smart Healthcare
- Deep learning approach for smart healthcare
- Explainable artificial intelligence (AI) technology for secured smart healthcare
- Serious Games for health
- Multimedia big data for health care applications
- Adaptive exergames for health
- Fuzzy Logic Approach for smart healthcare monitoring
- Multimedia Enhanced Learning, Training & Simulation for Smart Health
- Sensor and RFID technologies for Smart health
- Cloud-based smart health Services
- Resource allocation for Media Cloud-assisted health care
- IoT-Cloud for Smart Healthcare
- Wearable health monitoring
- Smart health service management
- Context-aware Smart -Health services and applications
- Elderly health monitoring
- Collaborative Smart Health
- Haptics for Surgical/medical Systems
- 5G Tactile Internet for Smart Health

Time	Paper
14:00	**Keynote Talk**
	Md. Abdur Rahman (University of Prince Mugrin)
15:00	**Coffee Break**
15:10	**Data Driven Patient-Specialized Neural Networks For Blood Glucose Prediction**

Time	Paper
	Alessandro Aliberti[1], Andrea Bagatin[1], Andrea Acquaviva[2], Enrico Macii[1], Edoardo Patti[1] ([1]Politecnico di Torino, [2]Universit di Bologna)
15:30	**Resource Allocation Management In Patient-To-Physician (P2P) Communications Based On Deep Reinforcement Learning In Smart Healthcare**
	Abduhameed Alelaiwi (King Saud University)
15:50	**Architecture Of Smart Health Care System Using Artificial Intelligence**
	M. M. Kamruzzaman (Jouf University)
16:10	**Coffee Break**
16:20	**Automated Grey And White Matter Segmentation In Digitized A Beta Human Brain Tissue Slide Images**
	Zhengfeng Lai[1], Runlin Guo[1], Wenda Xu[1], Zin Hu[1], Kelsey Mifflin[1], Brittany Dugger[1], Chen-Nee Chuah [1], Sen-ching Cheung[2] ([1]University of California, [2]University of Kentucky)
16:40	**Multi-CNN Feature Fusion For Efficient EEG Classification**
	Syed Umar Amin, Ghulam Muhammad, Wadood Abdul, Mohamed Bencherif, Mansour Alsulaiman (King Saud University)

W6: Monday, July 6, 2020

W6: 3D Point Cloud Processing, Analysis, Compression, and Communication (PC-PACC)

Time: 14:00 – 16:00
Organisers: Hui Yuan, Shandong University, China
               Huanqiang Zeng, Huaqiao University, China
               Philip A. Chou, Google, USA
               Pascal Frossard, EPFL, Switzerland

Description

The trend over the past decade towards computational imaging has enabled vast amounts of 3D data to be sensed using collections of sensors. At the same time, new types of displays have made it possible to view these 3D data in increasingly natural ways. This combination of trends is giving rise to the next generation of media beyond images, audio, and video: immersive media. Immersive media can be represented in various ways. One representation in particular – 3D point clouds – is becoming increasingly popular, in part because many of the computational imaging systems that capture immersive media are fundamentally digital systems that sample the natural world at discrete 3D points. The signals sampled at these points become attributes of the points, for example color, reflectance, transparency, normal direction, motion direction, and so forth.

The purpose of this workshop is to promote further research and understanding of 3D point clouds and their processing, analysis, compression, and communication, by providing a venue for the exchange and discussion of recent results.

Scope and Topics

The technical issues covered by this workshop include, but are not limited to:

- Efficient compression for 3D point clouds, e.g., novel prediction technologies, transform methods, rate-distortion optimization methods, etc.,
- 3D point cloud processing based on modern signal processing theory, e.g., graph signal processing,
- 3D point cloud-based computer vision tasks, e. g., visual tracking, object detection, semantic segmentation, and recognition,
- High-reliability and low-delay transmission management optimization for 3D point cloud transmission, and
- Artificial neural network-based 3D point cloud analysis.

Schedule

Time	Paper
14:00	**PC-PACC Workshop Opening Ceremony**
	Andr F. R. Guarda[1] Nuno M. M. Rodrigues[2] Fernando Pereira[1] ([1]Instituto de Telecomunicaes, [2]Instituto Politcnico Politcnico de Leiria)

Time	Paper
14:10	**Deep Learning-Based Point Cloud Geometry Coding: RD Control Through Implicit And Explicit Quantization**
	Andr F. R. Guarda[1], Nuno M. M. Rodrigues[2], Fernando Pereira[1] ([1]Instituto de Telecomunicaes, [2]Instituto Politcnico Politcnico de Leiria)
14:30	**Point Cloud Normal Estimation With Graph-Convolutional Neural Networks**
	Francesca Pistilli, Giulia Fracastoro, Diego Valsesia, Enrico Magli (Politecnico di Torino)
14:50	**High-Resolution Point Cloud Reconstruction From A Single Image By Redescription**
	Tianshi Wang, Li Liu, Huaxiang Zhang, Jiande Sun (Shandong Normal University)
15:10	**Coffee Break**
15:20	**Coarse To Fine Rate Control For Region-Based 3d Point**
	Qi Liu[1], Hui Yuan[1], Raouf Hamzaoui[2], Honglei Su[3] ([1]Shandong University, [2]De Montfort University, [3]Qingdao University)
15:40	**Weighted Attribute Prediction Based On Morton Code For Point Cloud Compression**
	Lei Wei[1], Shuai Wan[1], Zexing Sun[2], Xiaobin Ding[1], Wei Zhang[2] ([1]Northwestern Polytechnical University, [2]Xidian University)

W7: Friday, July 10, 2020

W7: The 1st ICME Workshop on Hyper-Realistic Multimedia for Enhanced Quality of Experience

Time: 09:00 – 18:00
Organisers: Frédéric Dufaux, CNRS, France
               Homer Chen, National Taiwan University, Taiwan
               Ivan V. Bajić , Simon Fraser University, Canada
               Søren Forchhammer, Technical University of Denmark, Denmark
               Xiaolin Wu, McMaster University, Canada

Technical Programme Committee

- Anthony Vetro, MERL, USA
- Atanas Gotchev, Tampere University, Finland
- Dong Tian, InterDigital, USA
- Fernando Pereira, Instituto Superior Técnico, Portugal
- Jiaying Liu, Beijing University, China
- Joachim Keinert, IIS Fraunhofer, Germany
- Mylene Farias, University of Brasília, Brasil
- Patrick le Callet, University of Nantes, France
- Peter Schelkens, VUB, Belgium
- Rafal Mantiuk, University of Cambridge, UK
- Sanghoon Lee, Yonsei University, Korea
- Søren Bech, Bang & Olufsen, Denmark
- Yonggang Wen, Nanyang Technological University, Singapore

Description

The aim of hyper-realistic media is to faithfully represent the physical world. The ultimate goal is to create an experience, which is perceptually indistinguishable from a real scene. Traditional technologies can only capture a fraction of the audio-visual information, limiting the realism of the experience. Recent innovations in computers and audio-visual technology have made it possible to circumvent these bottlenecks in audio-visual systems. As a result, new multimedia signal processing areas have emerged such as light fields, ultra-high definition, high frame rate, high dynamic range imaging and novel 3D audio and sound field technologies. The novel combinations of those technologies can facilitate a hyper-realistic media experience. Without a doubt, this will be the future frontier for new multimedia systems. However, several technological barriers and challenges need to be overcome in developing the best solutions perceptually.

This first ICME workshop on Hyper-Realistic Multimedia for Enhanced Quality of Experience aims at bringing forward recent advances related to capturing, processing, and rendering technologies. The goal is to gather researchers with diverse and interdisciplinary backgrounds to cover the full multimedia signal chain, to efficiently develop truly perceptually enhanced multimedia systems.

Scope and Topics

We seek unpublished high-quality papers within, but not limited to, the following topics:

- Lightfield, point-cloud, volumetric imaging

- High Dynamic Range imaging, Wide Color Gamut, Ultra High Definition
- Multichannel, 3D audio and sound field systems, audio rendering
- Hyper-realistic display technologies
- Human perception modeling, perceptually-inspired processing
- Processing and coding of hyper-realistic multimedia content
- Subjective and objective quality assessment
- Quality of experience
- Hyper-realism and immersiveness
- Human vision, clinical and experimental psychology and psychophysics

Schedule

Time	Talk
09:00	**Going Deep in Point Cloud Coding**
	Fernando Pereira (Instituto Superior Técnico, Universidade de Lisboa - Instituto de Telecomunicações)
10:00	**Coffee Break**

Session 1: Multimedia Systems

Session Chair: Homer Chen (National Taiwan University)

Time	Paper
10:10	**Time Varying Quality Estimation For HTTP Based Adaptive Video Streaming**
	Chaminda Hewage[1], Maria Martini[2] ([1]Cardiff Metropolitan University, [2]Kingston University)
10:30	**Towards View-Aware Adaptive Streaming Of Holographic Content**
	Hadi Amirpourazarian[1], Christian Timmerer[1], Mohammad Ghanbari[2] ([1]Alpen-Adria-Universität Klagenfurt, [2]University of Essex)
10:50	**Creation Of A Hyper-Realistic Remote Music Session With Professional Musicians And Public Audiences Using 5G Commodity Hardware**
	Alexander Carôt[1], Fragkiskos Sardis[2], Mischa Dohler[2], Simon Saunders[2], Navdeep Uniyal[3], Richard Cornock[4] ([1]Anhalt University of Applied Science, [2]King's College London, [3]University of Bristol, [4]Royal Birmingham Conservatoire)
11:10	**Coffee Break**

Session 2: View interpolation/synthesis

Session Chair: Søren Forchhammer (Technical University of Denmark)

Time	Paper
11:20	**A Benchmark Of Light Field View Interpolation Methods**
	Dingcheng Yue[1], Muhammad Shahzeb Khan Gul[2], Michel Bätz[2], Joachim Keinert[2], Rafal Mantiuk[1] ([1]University of Cambridge, [2]Fraunhofer IIS)
11:40	**Pipeline For Real-Time Video View Synthesis**
	Benoit Vandame, Neus Sabater, Guillaume Boisson, Didier Doyen, Valérie Allié, Frederic Babon, Remy Gendrot, Tristan Langlois, Arno Schubert (InterDigital)
12:00	**Learning Illumination From A Limited Field-Of-View Image**
	Yuke Sun, Dan Li, Shuang Liu, Tianchi Cao, Ying-Song Hu (Huazhong University of Science and Technology)
12:20	**Lunch Break**

Session 3: Quality assessment and perceptual studies

Session Chair: Frédéric Dufaux (CNRS)

Time	Paper
14:00	**No-Reference Quality Evaluation Of Light Field Content Based On Structural Representation Of Epipolar Plane Image**
	Ali Ak, Suiyi Ling, Patrick Le Callet (University of Nantes)
14:20	**Towards A Point Cloud Structural Similarity Metric**
	Evangelos Alexiou, Touradj Ebrahimi (EPFL)
14:40	**Field-Of-View Effect On The Perceived Quality Of Omnidirectional Images**
	Falah Jabar, Joao Ascenso, Maria Paula Queluz (Instituto Superior Tecnico, Universidade de Lisboa)
15:00	**Coffee Break**
15:10	**The Impact Of Screen Resolution Of Hmd On Perceptual Quality Of Immersive Videos**
	Wenjie Zou[1], Lihui Yang[1], FuZheng Yang[1], Zhibin Ma[2], Qiyong Zhao[2] ([1]Xidian University, [2]Huawei Technologies Co., Ltd.)
15:30	**Audio-Visual Perception Of Omnidirectional Video For Virtual Reality Applications**
	Fang-Yi Chao[1], Cagri Ozcinar[2], Chen Wang[2], Emin Zerman[2], Lu Zhang[1], Wassim Hamidouche[1], Olivier Deforges[1], Aljosa Smolic[2] ([1]INSA Rennes, [2]Trinity College Dublin)
15:50	**Coffee Break**

Session 4: High Dynamic Range

Session Chair: Ivan V. Bajić (Simon Fraser University)

Time	Paper
16:00	**Hmm-Based Framework To Measure The Visual Fidelity Of Tone Mapping Operators**
	Waqas Ellahi, Toinon Vigier, Patrick Le Callet (University of Nantes)
16:20	**Tone Mapping Operators: Progressing Towards Semantic-Awareness**
	Abhishek Goswami[1], Mathis Petrovich[1], Wolf Hauser[1], Frederic Dufaux[2] ([1]DxO Labs, [2]CNRS)
16:40	**A High-Resolution High Dynamic Range Light-Field Dataset With An Application To View Synthesis And Tone-Mapping**
	Muhammad Shahzeb Khan Gul, Thorsten Wolf, Michel Bätz, Matthias Ziegler, Joachim Keinert (Fraunhofer IIS)
17:00	**Coffee Break**

Session 5: Processing and Display

Session Chair: Xiaolin Wu (McMaster University)

Time	Paper
17:10	**Computational Multifocal Near-Eye Display With Hybrid Refractive-Diffractive Optics**
	Ugur Akpinar, Erdem Sahin, Atanas Gotchev (Tampere University)
17:30	**View Synthesis-Based Distributed Light Field Compression**
	Muhammad Umair Mukati[1], Milan Stepanov[2], Giuseppe Valenzise[3], Frederic Dufaux[3], Soren Forchhammer[2] ([1]Technical University of Denmark, [2]CentraleSupelec, [3]CNRS)
17:50	**Depth Of Field Image Sequences: 3D Cuing Of High Efficiency**
	Fangzhou Luo[1], Xiao Shu[1,2], Xiaolin Wu1 ([1]McMaster University, [2]Shanghai Jiao Tong University)

W8: Friday, July 10, 2020

W8: The 7th IEEE International Workshop on Mobile Multimedia Computing (MMC 2020)

Time: 11:00– 17:00

Organisers: Tian Gan, Shandong University, China

Wen-Huang Cheng, National Chiao Tung University, Taiwan

Kai-Lung Hua, National Taiwan University of Science and Technology, Taiwan

Vladan Velisavljevic, University of Bedfordshire, UK

Description

The intimate presence of mobile devices in our daily life, such as smartphones and various wearable gadgets like smart watches, has dramatically changed the way we connect with the world around us. Nowadays, in the era of the Internet-of-Things (IoT), these devices are further extended by smart sensors and actuators and amend multimedia devices with additional data and possibilities. With a growing number of powerful embedded mobile sensors like camera, microphone, GPS, gyroscope, accelerometer, digital compass, and proximity sensor, there is a variety of data available and hence enables new sensing applications across diverse research domains comprising mobile media analysis, mobile information retrieval, mobile computer vision, mobile social networks, mobile human-computer interaction, mobile entertainment, mobile gaming, mobile healthcare, mobile learning, and mobile advertising. Therefore, the workshop on Mobile Multimedia Computing (MMC 2018) aims to bring together researchers and professionals from worldwide academia and industry for showcasing, discussing, and reviewing the whole spectrum of technological opportunities, challenges, solutions, and emerging applications in mobile multimedia.

Scope and Topics

Topics of interest include but are not limited to:

- Ubiquitous computing on mobile and wearable devices
- Mobile visual search
- Action/gesture/object/speech recognition with mobile sensor
- Multimedia data in the IoT
- Computational photography on mobile devices
- Mobile social signal processing
- Human computer interaction with mobile and wearable devices
- Mobile virtual and augmented reality
- Mobile multimedia content adaptation and adaptive streaming
- Mobile multimedia indexing and retrieval
- Power saving issues of mobile multimedia computing
- Multi-modal and multi-user mobile sensing
- Personalization, privacy and security in mobile multimedia
- 2D/3D computer vision on mobile devices
- User behavior analysis of mobile multimedia applications
- Multimedia Cloud Computing
- Other topics related to mobile multimedia computing

Awards

The MMC Best Paper Award will be granted to the best overall paper. The selection is based on the quality, originality, and clarity of the submission.

Schedule

Session Chair: Wen-Huang Cheng (National Chiao Tung University)

Time	Talk
11:00	**Keynote: Application of Machine Learning in Smart Baby Monitor**
	Prof. Chuan-Yu Chang (National Yunlin University of Science and Technology, Service Systems Technology Center, Industrial Technology Research Institute (ITRI))
12:00	**Coffee Break**

Session 1

Time	Paper
12:10	**A Highly Efficient And Robust Method For Nnf-Based Template Matching**
	Yuhai Lan[1], Xingchun Xiang[2], Huaixuan Zhang[2], Shuhan Qi[3] ([1]Huawei Technologies Co. Ltd, [2]Tsinghua University, [3]Harbin Institute of Technology)
12:30	**Twinvo: Unsupervised Learning Of Monocular Visual Odometry Using Bi-Direction Twin Network**
	Xing Cai[1], Lanqing Zhang[1], Chengyuan Li[1], Ge Li[1], Thomas H Li[2] ([1]Beijing University Shenzhen Graduate School, [2]Beijing University)
12:50	**Lunch Break**

Session 2

Session Chair: Kai-Lung Hua (National Taiwan University of Science and Technology)

Time	Paper
14:00	**Fractional Step Discriminant Pruning: A Filter Pruning Framework For Deep Convolutional Neural Networks**
	Nikolaos Gkalelis, Vasileios Mezaris (Information Technologies Institute, Centre for Research and Technology Hellas)
14:20	**Bayesian Learning For Neural Network Compression**
	Jen-Tzung Chien, Su-Ting Chang (National Chiao Tung University)
14:40	**A Highly Efficient Training-Aware Deep Network Compression Paradigm**
	Chang Liu, Hongtao Lu (Shanghai Jiao Tong University)
15:00	**Coffee Break**

Session 3

Session Chair: Vladan Velisavljevic (University of Bedfordshire)

Time	Paper
15:10	**Deep Restoration Of Invisible QR Code From TPVM Display**
	Kaihua Song[1], Ning Liu[1], Zhongpai Gao[1], Jiahe Zhang[1], Guangtao Zhai[1], Xiao-Ping Zhang[2] ([1]Shanghai Jiao Tong University, [2]Ryerson University)
15:30	**A Learning-Based Lowcomplexity In-Loop Filter For Video Coding**
	Chao Liu[1], Heming Sun[2], Jiro Katto[2], Xiaoyang Zeng[1], Yibo Fan[1] ([1]Fudan University, [2]Waseda University)
15:50	**Fine-Grained Image Classification With Coarse And Fine Labels On One-Shot Learning**
	Qihan Jiao[1], Zhi Liu[1], Gongyang Li[1], Linwei Ye[2], Yang Wang[2] ([1]Shanghai University, [2]University of Manitoba)
16:10	**Coffee Break**

Session 4 (+ Best Awards)

Session Chair: Tian Gan (Shandong University)

Time	Paper
16:20	**LRNNET: A Light-Weighted Network With Efficient Reduced Non-Local Operation For Real-Time Semantic Segmentation**
	Weihao Jiang, Zhaozhi Xie, Yaoyi Li, Chang Liu, Hongtao Lu (Shanghai Jiao Tong University)
16:40	**Best Paper Award Announcement**
	Chao Liu[1], Heming Sun[2], Jiro Katto[2], Xiaoyang Zeng[1], Yibo Fan[1] ([1]Fudan University, [2]Waseda University)

W9: Friday, July 10, 2020

W9: IEEE International Workshop of Artificial Intelligence in Sports (AI-Sports)

Time: 11:00 – 13:00
Organisers: Prof. Huang-Chia Shih, Yuan Ze University, Taiwan
                Prof. Rainer Lienhart, Augsburg University, Germany
                Prof. Takahiro Ogawa, Hokkaido University, Japan
                Prof. Jenq-Neng Hwang, University of Washington, USA

Description

Sports data contains enormous potential in revolutionizing the sports industry. Coaches and teams are constantly searching for competitive sports data analytics that utilize AI and computer vision techniques to understand the deeper and hidden semantics of sports. By learning detailed statistics, coaches can assess defensive athletic performance and develop improved strategies. Sports data analytics is the process of analysing spatiotemporal content and sensor data from sports matches in online and offline scenarios. Currently, machine learning is already widely used in the sports industry. Many approaches have been proposed to extract semantic concepts or abstract attributes, such as objects, events, scene types, and captions, from sports videos. However, a limitation of conventional sports data analytics is that the domain-specific model can only be applied to analyse a single sport.

The goal of this workshop is to advance the field of research on the techniques of AI for sports data, develop more techniques to accurately evaluate and organize the data, and further strengthen the synergy between sports and science. Papers about machine learning, vision processing, and data sciences in sports and new forms of sports technologies are encouraged for submission.

Scope and Topics

Topics of interest include, but are not limited to:

- Object detection/modelling/recognition in sports data
- Athletes motion capturing with learning algorithm in sports
- Activities/actions recognition in sports data
- 3D Sports and AR/VR
- Artificial Intelligence strategy for sports
- Tracking trajectories analysis with learning algorithm in sports
- Semantic analysis in sports data
- Tactics analysis for sports
- Athletes' decision-making
- Supervised/unsupervised/reinforcement learning for sports data
- Efficient learning algorithm for sports data compression
- Energy- and resource-efficient machine learning architectures for large-scale sports data analytics
- Sports video content analysis in the media cloud
- Performance assessment in sports

- Emerging applications of deep learning in sports content search, retrieval, recommendation, understanding, and summarization
- Future trends and challenges for sports data analytics
- New learning theories and models for sports data analysis and understanding
- Other learning techniques from examples such as imitation learning and emerging cognition system in sports
- New sports database and metrics to evaluate the benefit of sports analytics system
- Survey papers regarding the topic of sports data analytics

Sponsors

- Ministry of Science and Technology Taiwan
- Chinese Image Processing Pattern Recognition Society
- Institute of Information & Computing Machinery, Taiwan.

Schedule

Session Chair: Huang-Chia Shih (Yuan Ze University)

Time	Paper
11:00	**Opening**
11:05	**Efficient Fitness Action Analysis Based on Spatio-temporal Feature Encoding**
	Jianwei Li[1], Hainan Cui[2], Tianxiao Guo[1], Qingrui Hu[1], Yanfei Shen[1] ([1]Beijing Sport University, China, [2]National Laboratory of Pattern Recognition, Institute of Automation, Chinese Academy of Sciences)
11:25	**Automatic Key Moment Extraction and Highlights Generation based on Comprehensive Soccer Video understanding**
	Xin Gao, Xusheng Liu, Taotao Yang, Guilin Deng, Hao Peng, Qiaosong Zhang, Hai Li, Junhui Liu (iQIYI Inc, China)
11:45	**Robust Estimation of Flight Parameters for Ski Jumpers**
	Katja Ludwig, Moritz Einfalt, Rainer Lienhart (University of Augsburg, Germany)
12:05	**Coffee Break**
12:15	**MVGAN Maximizing Time-lag Aware Canonical Correlation for Baseball Highlight Generation**
	Kaito Hirasawa, Keisuke Maeda, Takahiro Ogawa, Miki Haseyama (Hokkaido University, Japan)

W10: Friday, July 10, 2020

W10: The 2nd International Workshop on Big Surveillance Data Analysis and Processing (BIG-Surv)

Time: 14:00 – 18:00
Organisers: John See, Multimedia University, Malaysia
                Weiyao Lin, Shanghai Jiao Tong University, China
                Xiatian Zhu, Samsung AI Centre, UK

Description

With the rapid growth of video surveillance applications and services, the amount of surveillance videos has become extremely "big" which makes human monitoring tedious and difficult. Therefore, there exists a huge demand for smart surveillance techniques which can perform monitoring in an automatic or semi-automatic way. A number of challenges have arisen in the area of big surveillance data analysis and processing. Firstly, with the huge amount of surveillance videos in storage, video analysis tasks such as event detection, action recognition, and video summarization are of increasing importance in applications including events-of-interest retrieval and abnormality detection. Secondly, semantic data (e.g. objects' trajectory and bounding boxes) has become an essential data type in surveillance systems owing much to the growth of its size and complexity, hence introducing new challenging topics, such as efficient semantic data processing and compression, to the community. Thirdly, with the rapid growth from the static centric-based processing to the dynamic computing among distributed video processing nodes/cameras, new challenges such as multi-camera analysis, person re-identification, or distributed video processing are being issued in front of us. To meet these challenges, there is great need to extend existing approaches or explore new feasible techniques.

Scope and Topics

- Topics of interest include, but are not limited to:
- Event detection, action recognition, and activity analysis in surveillance videos
- Multi-camera analysis and recognition
- Object detection and tracking in surveillance videos
- Recognition and parsing of crowded scenes
- Person or group re-identification
- Summarization and synopsis on surveillance videos
- Surveillance scene parsing, segmentation, and analysis
- Semantic data processing in large-scale surveillance systems
- Data compression in surveillance systems
- Robust face recognition and detection under low-resolution surveillance videos
- Restoration and enhancement of degradations in low-quality surveillance videos

Schedule

Session Chair: Xiatian Zhu (Samsung AI Centre)

Time	Talk
14:00	**Keynote I**
	Dr. Wei-Shi Zheng (Sun Yat-Sen University, China)
14:40	**Coffee Break**

Session 1: Object Detection and Manipulation in Big Surveillance

Session Chair: John See (Multimedia University) and Weiyao Lin (Shanghai Jiao Tong University)

Time	Paper
14:50	**A Regional Regression Network For Monocular Object Distance Estimation**
	Yufeng Zhang, Yuxi Li, Mingbi Zhao, Xiaoyuan Yu (Shanghai Jiao Tong University)
15:10	**OD-GCN: Object Detection Boosted By Knowledge GCN**
	Zheng Liu[1], Zidong Jiang[1], Wei Feng[1], Hui Feng[2] ([1]iQIYI Inc, [2]Fudan University)
15:30	**Comparing CNN-Based Object Detectors On Two Novel Maritime Datasets**
	Valentine Soloviev[1], Fahimeh Farahnakian[2], Luca Zelioli[1], Bogdan Iancu[1], Johan Lilius[1], Jukka Heikkonen[2] ([1]Abo Akademi University, [2]University of Turku)
15:50	**Semi-Blind Super-Resolution with Kernel-Guided Feature Modification**
	Gongping Li, Yao Lu, Lihua Lu, Ziwei Wu, Xuebo Wang, Shunzhou Wang (Beijing Institute of Technology)
16:10	**Coffee Break**

Session Chair: Xiatian Zhu (Samsung AI Centre)

Time	Talk
16:20	**Keynote II**
	Dr. Yang Hua (Queens University of Belfast, UK)
14:50	**Coffee Break**

Session 2: Tracking and Event Processing in Big Surveillance

Session Chair: John See (Multimedia University) and Weiyao Lin (Shanghai Jiao Tong University)

Time	Paper
17:00	**Adaptive Depth Network For Crowd Counting And Beyond**
	Liangzi Rong, Chunping Li (Tsinghua University)
17:20	**Abnormal Event Detection In Surveillance Videos Using Two-Stream Decoder**
	Herman Prawiro[1], Jian-Wei Peng[2], Tse-Yu Pan[1], Min-Chun Hu[1] ([1]National Tsing Hua University, [2]National Cheng Kung University)
17:40	**Effect Of Video Transcoding Parameters On Visual Object Tracking For Surveillance Systems**
	Taieb Chachou[1], Sid Ahmed Fezza[2], Ghalem Belalem[1], Wassim Hamidouche[3] ([1]Universit Oran, [2]National Institute of Telecommunications and ICT, [3]Université de Rennes)

W11: Friday, July 10, 2020

W11: Data-driven Just Noticeable Difference for Multimedia Communication

Time: 14:00 – 17:00

Organisers: Prof. Yun Zhang, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China

Prof. Raouf Hamzaoui, De Montfort University, UK

Prof. C.-C. Jay Kuo, University of Southern California, USA

Prof. Dietmar Saupe, University of Konstanz, Germany

Description

The Picture-wise Just Noticeable Difference (PJND) for a given subject, image/video, and compression scheme is the smallest distortion that the subject can perceive when the image/video is compressed with this compression scheme. The PJND is normally determined with subjective quality assessment tests for a large population of viewers. Knowing the PJND statistics allows to reduce the bitrate without perceptual quality loss for the chosen proportion of the population. The workshop seeks papers proposing novel techniques to determine or predict the PJND statistics, as well as using these statistics for image/video processing, compression, and communication. While the focus of the workshop is on the PJND concept, contributions to the conventional JND approach where a JND threshold is computed at the pixel or subband level are also welcome provided the work is data driven.

Scope and Topics

Topics of interest include, but are not limited to:

- PJND/JND datasets for images, video, 3D video, omni-directional images/video, and point clouds
- PJND/JND visual attributes related to contents, displays, the environment and the human visual system
- Data-driven computational models for PJND/JND
- Machine learning techniques to estimate the PJND/JND
- Evaluation methods and metrics for JND/PJND models
- PJND/JND concept, visual attributes, perception and prediction models
- Data-driven PJND/JND models and their application to visual perception
- PJND/JND models and their application to multimedia signal processing, compression and communication

Sponsor: SFB-TRR 161

Session 1

Session Chair: Dietmar Saupe (University of Konstanz)

Time	Paper
14:00	**Visual Perception and JND Modelling: Progress & Challenges**
	Prof. Weisi Lin (Nanyang Technological University, Singapore)
15:00	**Coffee Break**

Session 2

Session Chair: Yun Zhang (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences)

Time	Paper
15:10	**A JND Dataset Based On VVC Compressed Images**
	Xuelin Shen[1], Zhangkau Ni[1], Wenhan Yang[1], Xinfeng Zhang[2], Shiqi Wang[1], Sam Kwong[1] ([1]City University of Hong Kong, [2]University of Chinese Academic of Sciences)
15:30	**Unsupervised Deep Learning For Just Noticeable Difference Estimation**
	Yuhao Wu, Weiping Ji, Jinjian Wu (Xidian University)
15:50	**Subjective Assessment Of Global Picture-Wise Just Noticeable Difference**
	Hanhe Lin[1], Mohsen Jenadeleh[1], Guangan Chen[1], Ulf-Dietrich Reips[1], Raouf Hamzaoui[2], Dietmar Saupe[1] ([1]University of Konstanz, [2]De Montfort University)
15:10	**Coffee Break**

Session 3

Session Chair: Dietmar Saupe (University of Konstanz)

Time	Paper
16:20	**JUNIPER: A JND Based Perceptual Video Coding Framework To Jointly Utilize Saliency And JND**
	Sanaz Nami, Farhad Pakdaman, Mahmoud R. Hashemi (University of Tehran)
16:40	**Satisfied User Ratio Prediction With Support Vector Regression For Compressed Stereo Images**
	Chunling Fan[1], Yun Zhang[1], Raouf Hamzaoui[2], Djemel Ziou[3], Qingshan Jiang[1] ([1]Shenzhen Institutes of Advanced Technology, [2]De Montfort University, [3]Universite de Sherbrooke)

W12: Friday, July 10, 2020

W12: Media-Rich Fake News (MedFake)

Time: 14:00 – 17:00

Organisers: Pradeep K. Atrey, University at Albany, State University of New York (SUNY), USA

Nitin Khanna, Indian Institute of Technology, Gandhinagar, India

Nalini K. Ratha, IBM Thomas J. Watson Research Center, USA

Luisa Verdoliva, University Federico II of Naples, Italy

Christian von der Weth, National University of Singapore, Singapore

Description

Fake news is a type of social hacking designed to change a reader's point of view, the effect of which may lead them to change their opinion about an individual, an organization, or a belief, and make misinformed decisions. With the advent of multimedia editing tools, fake news typically contains multiple types of media such as text, image, video and audio. Media-rich fake news can be easily made to look like a real one. Further, fakes news is prone to abrupt dissemination through increasing accessibility of the internet and online social media outlets. Although there has been a significant progress in multimedia security and forensics research, the modern web and social media avenues for creation and sharing of multimedia content poses fresh challenges related to fake content identification and mitigation. This workshop aims to bring forward further advances in the area of fake multimedia in terms of its proactive identification and the prevention of spread of such content.

Scope and Topics

We invite latest and high-quality papers presenting or addressing issues related to media-rick fake news, but not limited to:

- Media-rich fake email detection and prevention.
- Media-rich fake news identification over social media.
- Media-rich fake news mitigation over social media.
- Content management policy for news publishers.
- Content filtering for web.
- Impact and severity of fake content.
- Secure models, policies and practices for safe content filtering.
- Identification and credibility of the author and the publishing source of fake content.
- Fake content alert mechanisms.

Session 3

Time	Paper
14:00	**Deepfake Detection: Current Challenges And Next Steps**
	Siwei Lyu (University at Albany, State University of New York)

Time	Paper
14:20	**Information Distribution Based Defense Against Physical Attacks On Object Detection**
	Guangzhi Zhou[1,2], Hongchao Gao[1,2], Peng Chen[1,2], Jin Liu[1,2], Jiao Dai[1], Jizhong Han[1], Ruixuan Li[3] ([1]Institute of Information Engineering, Chinese Academy of Sciences, [2]School of Cyber Security, University of Chinese Academy of Sciences, [3]Huazhong University of Science and Technology)
14:40	**Nudging Users To Slow Down The Spread Of Fake News In Social Media**
	Christian von der Weth, Jithin Vachery, Mohan Kankanhalli (National University of Singapore)
15:00	**Coffee Break**
15:10	**Panel on De-faking Multimedia**
	Luisa Verdoliva[1], Siwei Lyu[2], Pradeep Atrey[2], Nasir Memon[3] ([1]University Federico II of Naples, [2]State University of New York, [3]New York University)

Grand Challenges

GC1: Wednesday, July 8, 2020

GC1: The CORSMAL Challenge: Multi-modal Fusion and Learning for Robotics

Time: 10:00 – 13:00

Organisers: Apostolos Modas, Pascal Frossard (EPFL, CH), Andrea Cavallaro, Ricardo Sanchez-Matilla, Alessio Xompero (QMUL, UK)

Summary

A major challenge for human-robot cooperation in household chores is enabling robots to predict the properties of containers with different fillings. Examples of containers are cups, glasses, mugs, bottles and food boxes, whose varying physical properties such as material, stiffness, texture, transparency, and shape must be inferred on-the-fly prior to a pick-up or a handover. The CORSMAL challenge focuses on the estimation of the pose, dimensions and mass of containers.

We will distribute a multi-modal dataset with visual-audio-inertial recordings of people interacting with containers, for example while pouring a liquid in a glass or moving a food box. The dataset is recorded with four cameras (one on a robotic arm, one worn by the person and two third-person views) and a microphone array. Each camera provides RGB, depth and stereo infrared images, which are temporally synchronized and spatially aligned. The body-worn camera is equipped with an inertial measurement unit, from which we provide the data as well.

The challenge focuses on the estimation of the pose, dimensions and mass of containers. Participants will determine the physical properties of a container while it is manipulated by a human. Containers vary in their physical properties (shape, material, texture, transparency and deformability). Containers and fillings are not known to the robot, and the only prior information available is a set of object categories (glasses, cups, food boxes) and a set of filling types (water, sugar, rice).

The challenge includes three scenarios:

Scenario 1: A container is on the table, in front of the robot. A person pours filling into the container or shakes an already filled food box, and then hands it over to the robot.

Scenario 2: A container is held by a person, in front of the robot. The person pours the filling into the container or shakes an already filled food box, and then hands it over to the robot.

Scenario 3: A container is held by a person, in front of the robot. The person pours filling into the container or shakes an already filled food box, and then walks around for a few seconds holding the container. Finally, the person hands the container over to the robot.

Each scenario is recorded with two different backgrounds and under two different lighting conditions.

Challenge webpage: http://corsmal.eecs.qmul.ac.uk/ICME2020_Challenge.html

Schedule

Time	Talk/Paper	Speaker
10:00	Welcome and introduction	Andrea Cavallaro, QMUL & Alan Turing
10:10	Unknown object grasping: techniques and benchmarks for challenging robotic platforms	Giulia Vezzani, Istituto Italiano di Tecnologia & DeepMind
10:25	Learning and multi-modal sensing for robotic grasping and manipulation	Yasemin Bekiroğlu, UCL & Chalmers
10:40	Automatic 3D annotations applied to 3D hand+object pose estimation	Vincent Lepetit, École des Ponts ParisTech
10:55	Touch, interaction, and presence in telerobotics - some challenges from the field	Rich Walker, Shadow Robot Company Ltd
11:10	Q&A with the speakers and discussion	
11:30	Break	
12:00	Learning robotic interaction tasks with stability guarantees	Shahbaz Abdul Khader, KTH
12:10	CORSMAL dataset: Containers Manipulation	Apostolos Modas, EPFL
12:20	CORSMAL demo: localisation and shape estimation of containers	Alessio Xompero, QMUL
12:30	CORSMAL Benchmark for human-robot handover	Ricardo Sanchez-Matilla, QMUL
12:40	Q&A with the speakers and discussion	
13:00	End of the session	

GC2: Wednesday, July 8, 2020

GC2: QA4Camera: Quality Assessment for Smartphone Cameras

Time: 11:00 – 12:30
Organisers: Wenhan Zhu, Xiongkuo Min, Guangtao Zhai (SJTU, China)

Summary

Smartphones have been one of the most popular digital devices in the past decades, with more than 300 million sold every quarter world-wide. Most of the smartphone vendors, such as Apple, Huawei, Samsung, launch new flagship smartphones every year. People use smartphone cameras to shoot selfie photos, film scenery or events, and record videos of family and friends. The specifications of smartphone camera and the quality of taken pictures are major criteria for consumer to select and buy smartphones. Many smartphone manufacturers also introduce and advertise their smartphones by introducing the strengths and advantages of their smartphone cameras. However, how to evaluate the quality of smartphone cameras and the pictures taken remains a problem for both smartphone manufacturers and consumers. Currently in the market, there are several teams and companies who evaluate the quality of smartphone cameras and announce the ranking and scores of the quality of smartphone cameras, and the scores of smartphone cameras are subjectively graded by several photographers and experts from different aspects, such as exposure, color, noise and texture. However, subjective assessment is not easy to reproduce, and it is not easy to deploy in practical image processing systems.

In the last two decades, objective image quality assessment (IQA) has been widely researched, and a large number of objective IQA algorithms have been designed to automatically and accurately estimate the quality of images. However, most objective IQA methods are designed to assess the overall perceived quality of the image degraded by various simulated distortions, which rarely exist in pictures taken by the modern smartphone cameras. Thus these methods are not suitable for the task of smartphone camera quality assessment, while objective evaluation methods specifically designed for the purpose of smartphone camera quality assessment are relatively rare.

The purpose of this Grand Challenge is to drive efforts of image quality assessment towards smartphone camera quality assessment. With this Grand challenge, it is expected to develop objective smartphone camera quality assessment models from four different aspects, including exposure, color, noise and texture, by using the datasets released by the organizers. The goal is to provide reference quality rankings or scores for smartphone cameras and to both smartphone manufacturers and consumers.

Participants are asked to submit four computational models to calculate the rankings of smartphone camera from four aspects: exposure, color, noise and texture.

Datasets and further information: https://qa4camera.github.io/

Schedule

Time	Talk/Paper	Speaker
11:00	Introduction and Overview of Grand Challenge	Guangtao Zhai, Wenhan Zhu, Xiongkuo Min (SJTU)
11:10	Convolutional Neural Networks Based on Residual Block cor No-Reference Image Quality Assessment Of Smartphone Camera Images	Chang Yao, Yuri Lu, Hang Liu, Menghan Hu, Qingli Li (East China Normal University)
11:20	Q&A	
11:25	Multi-Indicator Image Quality Assessment of Smartphone Camera Based on Human Subjective Behavior And Perception	Yuwen Zhou, Yunlu Wang, Youyong Kong, Menghan Hu (Southeast University)
11:35	Q&A	
11:40	Quality Difference Ranking Model for Smartphone Camera Photo Quality Assessment	Zefeng Ying, Da Pan, Ping Shi (Communications University China)
11:50	Q&A	
11:55	Opinion-Unaware No-Reference Image Quality Assessment of Smartphone Camera Images Based On Aesthetics And Human Perception	Zifeng Yuan, Yi Qi, Menghan Hu, Qingli Li (East China Normal University)
12:05	Q&A	
12:10	Quality Assessment Model for Smartphone Camera Photo based on Inception Network with Residual Module and Batch Normalization	Shuning Xu, Junbing Yan, Menghan Hu, Qingli Li, Jiantao Zhou (University of Macau)
12:20	Q&A	
12:25	Award Ceremony	
12:30	Close	

GC3: Embedded Deep Learning Object Detection Model Compression Competition for Traffic in Asian Countries

Time: 09:30 – 11:30

Organisers: Ted Kuo, Jenq-Neng Hwang, Jiun-In Guo, Chia-Chi Tsai (NCTU, Taiwan)

Summary

Object detection in the computer vision area has been extensively studied and making tremendous progress in recent years using deep learning methods. However, due to the heavy computation required in most deep learning-based algorithms, it is hard to run these models on embedded systems, which have limited computing capabilities. In addition, the existing open datasets for object detection applied in ADAS applications usually include pedestrian, vehicles, cyclists, and motorcycle riders in western countries, which is not quite similar to the crowded Asian countries with lots of motorcycle riders speeding on city roads, such that the object detection models trained by using the existing open datasets cannot be directly applied in detecting moving objects in Asian countries.

In this competition, we encourage the participants to design object detection models that can be applied in the competition's traffic with lots of fast speeding motorcycles running on city roads along with vehicles and pedestrians. The developed models not only can fit for embedded systems but also can achieve high accuracy at the same time.

This competition is divided into two stages: qualification and final competition.

Qualification competition: all participants submit their answers online. A score is calculated. The top 15 teams would be qualified to enter the final round of the competition

Final competition: the final score will be validated and evaluated by the organizing team over NVIDIA Jetson TX2 for the final score

The goal is to design a lightweight deep learning model suitable for constrained embedded system design to deal with traffic in Asian countries. We focus on detection accuracy, model size, computational complexity and performance optimization on NVIDIA Jetson TX2 based on a predefined metric.

Given the test image dataset, participants are asked to detect objects belonging to the following four classes {pedestrian, vehicle, scooter, bicycle} in each image, including class and bounding box.

Datasets and further information: https://pairlabs.ai/icme2020-grand-challenge/

Schedule

Time	Talk/Paper	Speaker
09:30	Welcome and Introduction	Prof. Ted T. Kuo, Prof. Jenq-Neng Hwang, Prof. Jiun-In Guo (NCTU)
09:35	Award Ceremony	Prof. Juin-In Guo (NCTU)
09:45	Overview of GC - The 2020 Embedded Deep Learning Object Detection Model Compression Competition for Traffic in Asian Countries	Chia-Chi Tsai (NCTU)
09:57	Brief Q&A	Chia-Chi Tsai (NCTU)
10:00	Efficient YOLO: A Lightweight Model for Embedded Deep Learning Object Dtection	Zixuan Wang (Bejing University of Posts and Telecommunications)
10:12	Brief Q&A	
10:15	Real Time Object Detection for Traffic Based on Knowledge Distillation: 3rd Place Solution to PAIR Competition	Yuan Zhao (AI Labs, Didi Chuxing)
10:27	Brief Q&A	
10:30	An Embedded Deep Learning Object Detection Model for Traffic in Asian Countries	Wei-Ju Chen (Foxconn)
10:42	Brief Q&A	
10:45	An Empirical Study of Object Detectors and Its Verification on the Embedded Object Detection Model Competition.	Junda Ren (Xiangtan University)
10:57	Brief Q&A	
11:00	Mobile CenterNet for Embedded Deep Learning Object Detection	Haonian Xie (University of Science and Technology of China)
10:12	Brief Q&A	
11:15	Discussion, Follow Up	Prof. Juin-In Guo (NCTU)
11:20	Close	Prof. Juin-In Guo (NCTU)

GC4: Wednesday, July 8, 2020

GC4: Encoding in the Dark

Time: 14:30 – 15:30
Organisers: Nantheera Anantrasirichai, Paul Hill, Angeliki Katsenou, Fan Zhang (University of Bristol, UK)

Summary

Low light scenes often come with acquisition noise, which not only disturbs the viewers, but it also makes video compression harder. These type of videos are often encountered in cinema as a result of artistic perspective or the nature of a scene. Other examples include shots of wildlife (e.g. mobula rays at night in Blue Planet II), concerts and shows, surveillance camera footage and more. Inspired by all above, we are proposing a challenge on encoding low-light captured videos. This challenge intends to identify technology that improves the perceptual quality of compressed low-light videos beyond the current state of the art performance of the most recent coding standards, such as HEVC, AV1VVC etc. Moreover, this will offer a good opportunity for both experts in the fields of video coding and image enhancement to address this problem. A series of subjective tests will be part of the evaluation, the results of which can be used in a study of the tradeoff between artistic direction and the viewers'page preferences, such as mystery movies and some investigation scenes in the film. Participants will be requested to deliver bitstreams with pre-defined maximum target rates for a given set of sequences, a short report describing their contribution and a software executable for running the proposed methodology and then can reconstruct the decoded videos by the given timeline. Participants are also encouraged to submit a paper for publication in the proceedings, and the best performers shall be prepared to present a summary of the underlying technology during the ICME session. The organisers will cross-validate and perform subjective tests to rank participant contributions.

Challenge webpage: https://bit.ly/2CdEbqb

Schedule

Time	Talk/Paper	Speaker
14:30	Welcome and Introduction	A. Katsenou, P. Hill
14:35	Encoding in the Dark Grand Challenge: an Overview	N. Anantrasirichai, F. Zhang, A. Malyugina, P. Hill, A. Katsenou
14:45	Enhancement and Encoding of Low Light Videos based on a Dehazing algorithm	Hong Gao, Yuan Zhang, Jin Wei, Boya Cheng
14:55	Q&A	
15:00	A CNN-based Post-Processing Algorithm for Dark Videos	Li Song, Donghui Feng, Yiwei Zhang
15:10	Q&A	
15:15	Benchmarking and Results from Quality Assessment	Alexandra Malyugina, Fan Zhang

15:23	Q&A (Brief)	
15:25	Presentation of Awards	Ioannis Katsavounidis1Joel Sole2 (1Facebook, 2 Netflix)
15:30	Close	A. Katsenou

GC5: Wednesday, July 8, 2020

GC5: Densely-sampled Light Field Reconstruction

Time: 10:00 – 11:30

Organisers: Prof. Atanas Gotchev (Tampere UT, Finland)

Summary

A Densely-Sampled Light Field (DSLF) is a discrete representation of the 4D approximation of the plenoptic function parameterized by two parallel planes (camera plane and image plane), where multi-perspective camera views are arranged in such a way that the disparities between adjacent views are less than one pixel. DSLF allows generating any desired light ray along the parallax axis by simple local interpolation. DSLF capture settings in terms of physical camera locations depends on the minimal scene depth and the camera sensor resolution. The number of cameras can be high especially for capturing wide field of view content. DSLF is an attractive representation of scene visual content, particularly for applications which require ray interpolation and view synthesis. The list of such applications includes refocusing, novel view generation for free-viewpoint video (FVV), super-multiview and light field displays and holographic stereography. Direct DSLF capture of real-world scenes requires a very high number of densely located cameras, which is not practical. This motivates the problem of DSLF reconstruction from a given sparse set of camera images utilizing the properties of the scene objects and the underlying plenoptic function.

The goal of this challenge is two-fold: First, to generate high-quality and meaningful DSLF datasets for further experiments; Second, to quantify the state of the art in the area of light field reconstruction and processing in order to provide instructive results about the practical LF capture settings in terms of number of cameras and their relative locations. This will be furthermore helpful in applications, aiming at:

- Predicting intermediate views from neighboring views in LF compression
- Generating high-quality content for super-multiview and LF displays
- Providing FVV functionality
- Converting LF (I.e. ray optics based) representation into holographic (I.e. wave optics based) representations for the needs of digital hologram generation

Proponents are asked to develop and implement algorithms for DSLF reconstruction from decimated-parallax imagery in three categories:

- Cat1: close camera views along parallax axis resulting in adjacent images with narrow disparity (e.g. in the range of 8 pixels)
- Cat2: moderately-distant cameras along parallax axis, resulting in adjacent images with moderate disparities (in the range of 15-16 pixels)
- Cat3: distant cameras, resulting in adjacent images with wide disparity (in the range of 30-32 pixels)

Algorithms in each category will be evaluated separately, thus resulting in three sub-challenges. Proponents are invited to submit solutions to one or more categories.

Datasets and further information:

http://civit.fi/icme-2020-grand-challenge-on-densely-sampled-light-field-reconstruction

Schedule

Time	Talk/Paper	Speaker
10:00	Welcome and Introduction	
10:05	Overview of Grand Challenge	Atanas Gotchev
10:15	Datasets	Robert Bregovic (TAU)
10:30	Overview of Proposed Solutions, Assessment Methodology, Benchmarking, Results and Demonstration	Yuan Gao (TAU)
10:55	Q&A	
11:10	Awards and Plenary Discussion	
11:25	Closing Remarks and Follow Up	Atanas Gotchev
11:30	Close	

Tutorials

Monday, July 6, 2020

Video Summarization and Re-use Technologies and Tools

Time: 10:00 – 13:00

Speakers: Vasileios Mezaris, Research Director, Information Technologies Institute / Centre for Research and Technology Hellas, Thessaloniki, Greece

Lyndon J B Nixon, CTO of MODUL Technology GmbH and Assistant Professor at MODUL University, Austria

Abstract

This tutorial will deliver a broad overview of the main technologies that enable the automatic generation of video summaries for re-use in different distribution channels, and the optimisation of the video summary-based reach and engagement of the audience; and, provide an in-depth analysis of selected SoA methods and tools on these topics. It will comprise two main modules. The first module, on video summaries generation, will provide an overview of deep-learning-based video summarization techniques, and then will discuss in depth a few selected SoA techniques that are based on Generative Adversarial Networks. Special emphasis will be put on unsupervised learning techniques, whose advantages will also be elaborated. An overview of video summarization datasets, evaluation protocols and related considerations & limitations will also be presented. The second module, on video summaries (re-)use and recommendation, will discuss the use of Web and social media analysis to detect topics in online content and trends in online discussion. It will subsequently examine the application of predictive analytics to suggest future trending topics, in order to guide video summaries publication strategies. Besides the underlying technologies, a few complete tools will be demonstrated, to link the research aspects of video summarization, trend detection and predictive analytics with the practitioners' expectations and needs for video summarization and (re-)publication online. The tutorial's target audience includes researchers in the video summarization and deep learning topics and, in general, in deep-learning-based multimedia understanding; researchers in web and social media data analysis, topic and trends detection, and predictive analytics; and practitioners in video content creation and (re-)use, including YouTube/Instagram prosumers, TV and film producers, representatives of broadcasters and online media platforms.

Schedule	
Introduction and motivation	15 min
Video summaries generation: deep-learning-based methods, datasets and evaluation protocols	75 min
BREAK	
Topic-driven summarization: tools for trending topics detection, prediction and video summarization	75 min
Concluding remarks and discussion	15 min
Total time (excl. break)	**3 hrs**

Speakers

Vasileios Mezaris is a Research Director (Senior Researcher Grade A) with the Information Technologies Institute / Centre for Research and Technology Hellas, Thessaloniki, Greece. His research interests include multimedia understanding and artificial intelligence; in particular, image and video analysis and annotation, machine learning and deep learning for multimedia understanding and big data analytics, multimedia indexing and retrieval, and applications of multimedia understanding and artificial intelligence in specific domains (including TV broadcasting and news, education and culture, medical / ecological / business data analysis). Dr. Mezaris has co-authored more than 40 papers in refereed journals, 20 book chapters, 150 papers in international conferences, and 3 patents. He has edited two books and several proceedings volumes; he serves as Associate Editor for the IEEE Signal Processing Letters (2016-present) and the IEEE Transactions on Multimedia (2012-2015, and 2018-present); and serves regularly as a guest editor for international journals, as an organizer or reviewer for conferences/workshops, and as a reviewer of research projects and project proposals for national and international funding agencies. He has participated in many research projects, and as the Coordinator in EC H2020 projects InVID and MOVING. He is a Senior Member of the IEEE.

Lyndon J B Nixon is the CTO of MODUL Technology GmbH. He also holds the position of Assistant Professor in the New Media Technology group at MODUL University. He has been researching in the semantic multimedia domain since 2001. His PhD (2007) was on automatic generation of multimedia presentations using semantics. He has been active in many European and Austrian projects including in the role of Scientific Coordinator (LinkedTV) and Project Coordinator (ReTV, SOFI, MediaMixer, SmartReality, ConnectME). He is a proponent of "Linked Media" – ensuring rich semantic annotations of multimedia assets so that systems can derive associations between them for search, browsing, navigation or recommendation – and has co-organized a series of Linked Media workshops (WWW2013, ESWC2014, WWW2015, ESWC2016). These are among over 40 events he has co-chaired complemented by 27 talks, 8 book chapters, 6 journal articles and 88 refereed publications. Currently he focuses his research on content analysis of image and video in social networks, semantic annotation and linking of media fragments, and combining annotations and data analytics in prediction and recommendation for TV programming.

Monday, July 6, 2020

Deep Bayesian Modelling and Learning

Time: 10:00 – 13:00
Speaker: Jen-Tzung Chien, Chair Professor, National Chiao Tung University, Taiwan

Abstract

This tutorial addresses the advances in deep Bayesian learning for spatial and temporal data which are ubiquitous in speech, music, text, image, video, web, communication and networking applications. Multimedia contents are analyzed and represented to fulfill a variety of tasks ranging from classification, synthesis, generation, segmentation, dialogue, search, recommendation, summarization, answering, captioning, mining, translation, adaptation to name a few. Traditionally, "deep learning" is taken to be a learning process where the inference or optimization is based on the real-valued deterministic model. The "latent semantic structure" in words, sentences, images, actions, documents or videos learned from data may not be well expressed or correctly optimized in mathematical logic or computer programs. The "distribution function" in discrete or continuous latent variable model for spatial and temporal sequences may not be properly decomposed or estimated.

This tutorial addresses the fundamentals of statistical models and neural networks, and focuses on a series of advanced Bayesian models and deep models including Bayesian nonparametrics, recurrent neural network, sequence-to-sequence model, variational auto-encoder (VAE), generative adversarial network, attention mechanism, memory-augmented neural network, skip neural network, temporal difference VAE, stochastic neural network, stochastic temporal convolutional network, predictive state neural network, and policy neural network. Enhancing the prior/posterior representation is addressed. We present how these models are connected and why they work for a variety of applications on symbolic and complex patterns in sequence data. The variational inference and sampling method are formulated to tackle the optimization for complicated models. The embeddings, clustering or co-clustering of words, sentences or objects are merged with linguistic and semantic constraints. A series of case studies are presented to tackle different issues in deep Bayesian modeling and learning. At last, we will point out a number of directions and outlooks for future studies.

Schedule	
Introduction and motivation	30 min
Bayesian learning	30 min
Deep spatial and temporal modelling	60 min
Deep Bayesian learning	60 min
Total time	**3 hrs**

Speakers

Jen-Tzung Chien is the Chair Professor at the National Chiao Tung University, Taiwan. He held the Visiting Professor position at the IBM T. J. Watson Research Center, Yorktown Heights, NY, in 2010. His research interests include machine learning, deep learning, computer vision and natural language processing. Dr. Chien served as the associate editor of the IEEE Signal Processing Letters in 2008-2011the general co-chair of the IEEE International Workshop on Machine Learning for Signal Processing in 2017, and the tutorial speaker of the ICASSP in 20122015, 2017, the INTERSPEECH in 2013, 2016, the COLING in 2018, the AAAI, ACL, KDD, IJCAI in 2019. He received the Best Paper Award of IEEE Automatic Speech Recognition and Understanding Workshop in 2011 and the AAPM Farrington Daniels Award in 2018. He has published extensively, including the books "Bayesian Speech and Language Processing", Cambridge University Press, in 2015, and "Source Separation and Machine Learning", Academic Press, in 2018. He is currently serving as an elected member of the IEEE Machine Learning for Signal Processing Technical Committee.

Monday, July 6, 2020

Immersive Imaging Technologies: from Capture to Display

Time: 14:00 - 17:00
Speakers: Dr. Martin Alain, Trinity College Dublin, Ireland
            Dr. Cagri Ozcinar, Trinity College Dublin, Ireland
            Dr. Emin Zerman, Trinity College Dublin, Ireland

Abstract

The advances in imaging technologies in the last decade brought a number of alternatives to the way we acquire and display visual information. These new imaging technologies are immersive as they provide the viewer with more information which either surrounds the viewer or helps the viewer to be immersed in this augmented representation. These immersive imaging technologies include light fields, omnidirectional images and videos, and volumetric (also known as free-viewpoint) videos. These different modalities cover the full spectrum of immersive imaging, from 3 degrees of freedom (DoF) to 6DoF, and can be used for virtual reality (VR) as well as augmented reality (AR). Applications of immersive imaging notably include education, cultural heritage, tele-immersion, remote collaboration, and communication. In this tutorial, we cover all stages of the immersive imaging technologies from content capture to display. The main concepts of immersive imaging will first be introduced, and creative experiments based on immersive imaging will be presented as a specific illustration of these technologies. Next, content acquisition based on single or multiple camera systems is presented, along with the corresponding data formats. Content coding is then discussed, notably ongoing standardisation efforts, followed by adaptive streaming strategies. Immersive imaging displays are then presented, as they play a crucial role in the user's sense of immersion. Image rendering algorithms related to such displays are also explained. Finally, perception and quality evaluation of immersive imaging is presented.

Schedule	
Part I - Immersive Imaging Technologies:	20 min
Immersion & Tele-Immersion, Different Imaging Modalities, Creative Experiments	
Part II - Acquisition and Data Format:	40 min
Single-camera systems, Multi-camera systems	
Part III - Content Delivery:	40 min
Coding, Adaptive Streaming	
Part IV - Rendering and Display Technologies:	40 min
Immersive imaging on 2D screens, HMDs for VR, HMDs for AR	
Part V - Perception & Quality Evaluation:	40 min
Visual Perception, Visual Attention, Quality Assessment	
Total time	**3 hrs**

URL to Tutorial Website:

https://v-sense.scss.tcd.ie/lectures/tutorial-on-immersive-imaging-technologies/

Speakers

Dr. Martin Alain received the Master's degree in electrical engineering from the Bordeaux Graduate School of Engineering (ENSEIRB-MATMECA), Bordeaux, France in 2012 and the PhD degree in signal processing and telecommunications from University of Rennes 1Rennes, France in 2016. As a PhD student working in Technicolor and INRIA in Rennes, France, he explored novel image and video compression algorithms. Since September 2016, he is a postdoctoral researcher in the V-SENSE project at the School of Computer Science and Statistics in Trinity College Dublin, Ireland. His research interests lie at the intersection of signal and image processing, computer vision, and computer graphics. His current topic involves light field imaging, with a focus on denoising, super-resolution, compression, scene reconstruction, and rendering. Martin is a reviewer for the Irish Machine Vision and Image Processing conference, IEEE International Conference on Image Processing, IEEE Transactions on Image Processing, IEEE Transactions on Circuits and Systems I, and IEEE Transactions on Circuits and Systems for Video Technology. He was special session chair at the EUSIPCO 2018 in Rome, ICIP 2019 in Taipei, and ICME 2020 in London.

Dr. Cagri Ozcinar is a research fellow within the V-SENSE project at Trinity College Dublin, Ireland, since July 2016. Before he joined the V-SENSE team, he was a post-doctoral fellow in the Multimedia group at Institut Mines-Telecom Telecom ParisTech, Paris, France. Cagri received the M.Sc. (Hons.) and the Ph.D. degrees in electronic engineering from the University of Surrey, UK, in 2010 and 2015, respectively. His current research interests include visual attention (saliency), coding, streaming, and computer vision for immersive audio-visual technologies. Cagri has been serving as a reviewer for a number of journal and conference proceedings, such as IEEE TIP, IEEE TCSVT, IEEE TMM, IEEE Journal of STSP, CVPR, IEEE ICASSP, IEEE ICIP, IEEE QoMEX, IEEE MMSP, EUSIPCO, and BMVC. Cagri has been involved in organizing workshops, challenges, and special sessions. He was a special session chair on recent advances in immersive imaging technologies at the EUSIPCO 2018, ICIP 2019, and ICME 2020.

Dr. Emin Zerman is a postdoctoral research fellow in V-SENSE project at the School of Computer Science and Statistics, Trinity College Dublin, Ireland since February 2018. He received his Ph.D. degree (2018) in Signals and Images from Télécom ParisTech, France, and his M.Sc. degree (2013) and B.Sc. degree (2011) in Electrical and Electronics Engineering from the Middle East Technical University, Turkey. His research interests include image and video processing, immersive multimedia applications, human visual perception, high dynamic range imaging, and multimedia quality assessment.Emin is a member of Institute of Electrical and Electronics Engineers (IEEE) and IEEE Signal Processing Society. He has been acting as a reviewer for several conferences and peer-reviewed journals, including Signal Processing: Image Communications, IEEE Transactions on Circuits and Systems for Video Technology (TCSVT), IEEE Transactions on Image Processing (TIP), MDPI Journal of Imaging, MDPI Applied Sciences, IEEE International Workshop on Multimedia Signal Processing (MMSP), European Signal Processing Conference (EUSIPCO), and IEEE International Conference on Image Processing (ICIP). He is one of the special session organisers at the ICME 2020 in London.

Friday, July 10, 2020

Versatile Video Coding – Algorithms and Specification

Time: 10:00 – 13:00
Speaker: Mathias Wien, RWTH Aachen University, Germany
            Benjamin Bross, Fraunhofer Heinrich Hertz Institute (HHI), Germany

Abstract

The tutorial provides an overview on the latest emerging video coding standard VVC (Versatile Video Coding) to be jointly published by ITU-T and ISO/IEC. It has been developed by the Joint Video Experts Team (JVET), consisting of ITU-T Study Group 16 Question 6 (known as VCEG) and ISO/IEC JTC 1/SC 29/WG 11 (known as MPEG). VVC has been designed to achieve significantly improved compression capability compared to previous standards such as HEVC, and at the same time to be highly versatile for effective use in a broadened range of applications. Some key application areas for the use of VVC particularly include ultra-high-definition video (e.g. 4K or 8K resolution), video with a high dynamic range and wide colour gamut (e.g., with transfer characteristics specified in Rec. ITU-R BT.2100), and video for immersive media applications such as 360˚ omnidirectional video, in addition to the applications that have commonly been addressed by prior video coding standards. Important design criteria for VVC have been low computational complexity on the decoder side and friendliness for parallelization on various algorithmic levels. VVC is planned to be finalized by July 2020 and is expected to enter the market very soon.

The tutorial details the video layer coding tools specified in VVC and develops the concepts behind the selected design choices. While many tools or variants thereof have been available before, the VVC design reveals many improvements compared to previous standards which result in compression gain and implementation friendliness. Furthermore, new tools such as the Adaptive Loop Filter, or Matrix-based Intra Prediction have been adopted which contribute significantly to the overall performance. The high-level syntax of VVC has been re-designed compared to previous standards such as HEVC, in order to enable dynamic sub-picture access as well as major scalability features already in version 1 of the specification.

Schedule	
Part I:	90 min
Specification and Standardisation, Video Coding Systems, Coding Structures and High-Level Syntax, Coding Tool	
BREAK	30 min
Part II:	90 min
Profiles, Tiers, and Levels, Encoding Tools, Summary and Outlook	
Total tutorial time (excluding break)	**3h**

Speakers

Mathias Wien received the Diploma and Dr.-Ing. degrees from Rheinisch-Westfälische Technische Hochschule Aachen (RWTH Aachen University), Aachen, Germany, in 1997 and 2004, respectively. In 2018, he achieved the status of the habilitation, which makes him an independent scientist in the field of visual media communication. He was with Institut für Nachrichtentechnik, RWTH Aachen University (head: Prof. Jens-Rainer Ohm) as a researcher from 1997-2006, and as senior researcher and head of administration from 2006-2018. Since July 2018, he is with Lehrstuhl für Bildverarbeitung, RWTH Aachen University (head: Prof. Dorit Merhof) as senior researcher, leader of the Visual Media Communication group, and head of administration. His research interests include image and video processing, immersive, space-frequency adaptive and scalable video compression, and robust video transmission. Mathias has been an active contributor to H.264/AVC, HEVC, and VVC. He has participated and contribute to ITU-T VCEG, ISO/IEC MPEG, the Joint Video Team (JVT), the Joint Collaborative Team on Video Coding (JCT-VC), and the Joint Video Experts Team (JVET) of VCEG and ISO/IEC MPEG. He has served as a co-editor of the scalability amendment to H.264/AVC (SVC). In the aforementioned standardization bodies, he has co-chaired and coordinated several AdHoc groups as well as tool- and core experiments. Mathias has published more than 60 scientific articles and conference papers in the area of video coding and has co-authored several patents in this area. Mathias is member of the IEEE Signal Processing Society and the IEEE Circuits and Systems Society. He is a member of IEEE CASS TC VSPC. He is Technical Program Co-Chair of PCS 2019 and has co-organized and co-chaired special sessions at IEEE VCIP and PCS. He was the Corresponding Guest Editor of a IEEE JETCAS Special Issue on Immersive Video Coding and Transmission. He has co-organized and co-chaired the Grand Challenge on Video Compression Technology at IEEE ICIP 2017. He serves as associate editor for IEEE Transactions on Circuits and Systems for Video Technology, and Signal Processing: Image Communication. Mathias has further authored and co-authored more than 200 standardization documents. He has published the Springer textbook "High Efficiency Video Coding: Coding Tools and Specification", which fully covers Version 1 of HEVC.

Benjamin Bross received the Dipl.-Ing. degree in electrical engineering from RWTH Aachen University, Aachen, Germany, in 2008. In 2009, he joined the Fraunhofer Institute for Telecommunications – Heinrich Hertz Institute, Berlin, Germany, where he is currently heading the Video Coding Systems group at the Video Coding & Analytics Department and in 2011he became a part-time lecturer at the HTW University of Applied Sciences Berlin. Since 2010, Benjamin is very actively involved in the ITU-T VCEG | ISO/IEC MPEG video coding standardization processes as a technical contributor, coordinator of core experiments and chief editor of the High Efficiency Video Coding (HEVC) standard [ITU-T H.265 | ISO/IEC 23008-2] and the emerging Versatile Video Coding (VVC) standard. In addition to his involvement in standardization, Benjamin is coordinating standard-compliant software implementation activities. This includes the development of an HEVC encoder that is currently deployed in broadcast for HD and UHD TV channels. Besides giving talks about recent video coding technologies, Benjamin Bross is an author or co-author of several fundamental HEVC and VVC-related publications, and an author of two book chapters on HEVC and Inter-Picture Prediction Techniques in HEVC. He received the IEEE Best Paper Award at the 2013 IEEE International Conference on Consumer Electronics – Berlin in 2013, the SMPTE Journal Certificate of Merit in 2014 and an Emmy Award at the 69th Engineering Emmy Awards in 2017 as part of the Joint Collaborative Team on Video Coding for its development of HEVC.

Friday, July 10, 2020

Device Fingerprinting and its Applications in Multimedia Forensics and Security

Time: 11:00 – 13:00

Speaker: Chang-Tsun Li, Deakin University, Australia

Abstract

Similar to people identification through human fingerprint analysis, multimedia forensics and security assurance through device fingerprint analysis have attracted much attention amongst scientists, practitioners and law enforcement agencies around the world in the past decade. Device information, such as device models and serial numbers, stored in the EXIF are useful for identifying the devices responsible for the creation of the images and videos in question. However, stored separately from the content, the metadata in the EXIF can be removed and manipulated at ease. Device fingerprints deposited in the content by the devices provide a more reliable alternative to aid forensic investigations and multimedia assurance. Various hardware or software components of the imaging devices leave model or device specific artifacts in the content in the digital image acquisition process. These model or device specific artifacts, if properly extracted, can be used as device fingerprints to identify the source devices. This tutorial will start with an introduction to various types of device fingerprints. The presentation will then focus on sensor pattern noise, which is currently the only form of device fingerprint that can differentiate individual devices of the same model. We will also discuss the real-world applications of sensor pattern noise to source device verification, common source inference, source device identification, content authentication (including fake new detection) and source-oriented image clustering. Some real-world use cases in the law enforcement community will also be presented. Finally we will discuss the limitations of existing device fingerprints and point out a few lines for future investigations including the use of deep learning to inference device fingerprints.

Schedule	
Part I - Device Fingerprints:	25 min
Lens Aberrations, Colour filter array and colour interpolation artefacts, Camera response function, Quantisation table of JPEG compression, Sensor pattern noise	
Part II - Sensor Pattern Noise Extraction and Enhancement	20 min
Sensor pattern noise extraction, Sensor pattern noise enhancement	
BREAK	10 min
Part III: SPN in Multimedia Forensic Applications	30 min
Source device verification, Common source inference, Source device identification, Content authentication (including fake news detection), Source-oriented image clustering	
Part IV: Conclusions and Future Works	25 min
Conclusions, Issues surrounding existing device fingerprints, Future works (including the use of deep learning)	
Total tutorial time (including break)	**2h**

Speakers

Chang-Tsun Li received the BSc degree in electrical engineering from National Defence University (NDU), Taiwan, in 1987, the MSc degree in computer science from U.S. Naval Postgraduate School, USA, in 1992and the PhD degree in computer science from the University of Warwick, UK, in 1998. He was an associate professor of the Department of Electrical Engineering at NDU during 1998-2002 and a visiting professor of the Department of Computer Science at U.S. Naval Postgraduate School in the second half of 2001. He was a professor of the Department of Computer Science at the University of Warwick, UK, until Dec 2016. He was a professor of the School of Computing and Mathematics, and Director of Data Science Research Unit, Charles Sturt University, Australia from January 2017 to February 2019. He is currently Professor of Cyber Security of the School of Information Technology at Deakin University, Australia and Research Director of Deakin's Centre for Cyber Security research and Innovation. His research interests include multimedia forensics and security, biometrics, data mining, machine learning, data analytics, computer vision, image processing, pattern recognition, bioinformatics, and content-based image retrieval. The outcomes of his multimedia forensics research have been translated into award-winning commercial products protected by a series of international patents and have been used by a number of law enforcement agencies, national security institutions, courts of law, banks and companies around the world. He is currently Associate Editor of IEEE Access, the EURASIP Journal of Image and Video Processing (JIVP) and Associate of Editor of IET Biometrics. He has published over 200 papers in prestigious international journals and conference proceedings, including a winner of 2018 IEEE AVSS Best Paper Award. He contributed actively in the organisation of many international conferences and workshops and also served as member of the international program committees for numerous international conferences. He is also actively disseminating his research outcomes through keynote speeches, tutorials and talks at various international events.

Friday, July 10, 2020

Point Cloud Coding: The Status Quo

Time: 14:00 – 17:30

Speaker: João Ascenso, Instituto Superior Técnico, Lisbon, Portugal

Fernando Pereira, Instituto Superior Técnico and Instituto de Telecomunicações, Lisbon, Portugal

Abstract:

Recently, 3D visual representation models such as light fields and point clouds are becoming popular due to their capability to represent the real world in a more complete, realistic and immersive way, paving the road for new and more advanced visual experiences. The point cloud (PC) representation model is able to efficiently represent the surface of objects/scenes by means of a set of 3D points and associated attributes and is increasingly being used from autonomous cars to augmented reality. Emerging imaging sensors have made easier to perform richer and denser PC acquisitions, notably with millions of points, making impossible to store and transmit these very high amounts of data. This bottleneck has raised the need for efficient PC coding solutions that can offer immersive visual experiences and good quality of experience. This tutorial will survey the most relevant PC basics as well as the main PC coding solutions available today. Regarding the content of this tutorial is important to highlight: 1) a new classification taxonomy for PC coding solutions to more easily identify and abstract their differences, commonalities and relationships; 2) representative static and dynamic PC coding solutions available in the literature, such as octree, transform and graph based PC coding among others; 3) MPEG PC standard coding solutions which have been recently developed, notably Video-based Point Cloud Coding (V-PCC), for dynamic content, and Geometry-based Point Cloud Coding (G-PCC), for static and dynamically acquired content; 4) rate-distortion (RD) performance evaluation including the G-PCC and V-PCC standards and other relevant PC coding solutions, using suitable objective quality metrics. The tutorial will end with some discussion on the strengths and weaknesses of the current PC coding solutions as well as on future trends and directions.

Speakers

João Ascenso is a professor at the department of Electrical and Computer Engineering of Instituto Superior Técnico and is with the Multimedia Signal Processing Group of Instituto de Telecomunicações, Lisbon, Portugal. João Ascenso received the E.E., M. Sc. and Ph.D in Electrical and Computer Engineering from Instituto Superior Técnico, in 1999, 2003 and 2010, respectively. In the past, he was an adjunct professor in Instituto Superior de Engenharia de Lisboa and Instituto Politécnico de Setúbal. He coordinates several national and international research projects, in the areas of coding, analysis and description of video. The last project grants received were in the field of point cloud coding and quality assessment. He is also very active in the ISO/IEC MPEG and JPEG standardization activities and currently chairs the JPEG-AI ad-hoc group that targets the evaluation and development of learning-based image compression solutions. He has published more than 100 papers in international conferences and journals and has more than 3200 citations over 35 papers (h-index of 25). He is an associate editor of IEEE Transactions on Multimedia, IEEE Transactions on Image Processing and was an associate editor of the IEEE Signal Processing

Letters. He is an elected member of the IEEE Multimedia Signal Processing Technical Committee. He acts as a member of the Organizing Committees of well-known IEEE international conferences, such as MMSP 2020, ICME 2020, ISM 2018, QoMEX 2016, among others. He also served as a technical program committee member and area chair for several widely known conferences in the multimedia signal processing field, such as ICIP, MMSP and ICME and made invited talks and tutorials at conferences and workshops. He has received two Best Paper Awards at the 31st Picture Coding Symposium 2015, Cairns, Australia and at the IEEE International Conference on Multimedia and Expo 2019. He has also won the 'Excellent Professor' award from the Electrical and Computers Engineering Department of Instituto Superior Técnico several times. His current research interests include visual coding, quality assessment, light-fields, point clouds and holography processing, indexing and searching of audio–visual content and visual sensor networks.

Fernando Pereira is currently with the Department of Electrical and Computers Engineering of Instituto Superior Técnico and with Instituto de Telecomunicações, Lisbon, Portugal. He is responsible for the participation of IST in many national and international research projects. He acts often as project evaluator and auditor for various organizations. He is Area Editor of the Signal Processing: Image Communication Journal and Associate Editor of the EURASIP Journal on Image and Video Processing, and is or has been a member of the Editorial Board of the Signal Processing Magazine, Associate Editor of IEEE Transactions of Circuits and Systems for Video Technology, IEEE Transactions on Image Processing, IEEE Transactions on Multimedia, and IEEE Signal Processing Magazine. In 2013-2015, he was the Editor-in-Chief of the IEEE Journal of Selected Topics in Signal Processing.He is or has been a member of the IEEE Signal Processing Society Technical Committees on Image, Video and Multidimensional Signal Processing, and Multimedia Signal Processing, and of the IEEE Circuits and Systems Society Technical Committees on Visual Signal Processing and Communications, and Multimedia Systems and Applications. He was an IEEE Distinguished Lecturer in 2005 and elected as an IEEE Fellow in 2008 for "contributions to object-based digital video representation technologies and standards". He has been elected to serve on the Signal Processing Society Board of Governors in the capacity of Member-at-Large for a 2012 and a 2014-2016 term. Since January 2018, he is the SPS Vice-President for Conferences. Since 2013, he is also a EURASIP Fellow for "contributions to digital video representation technologies and standards". He has been elected to serve on the European Signal Processing Society Board of Directors for a 2015-2018 term. Since 2015, he is also a IET Fellow. He is/has been a member of the Scientific and Program Committees of many international conferences and workshops. He has been the General Chair of the Picture Coding Symposium (PCS) in 2007, the Technical Program Co-Chair of the Int. Conference on Image Processing (ICIP) in 2010 and 2016, the Technical Program Chair of the International Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS) in 2008 and 2012and the General Chair of the International Conference on Quality of Multimedia Experience (QoMEX) in 2016. He has been participating in the MPEG standardization activities, notably as the head of the Portuguese delegation, chairman of the MPEG Requirements Group, and chairman of many Ad Hoc Groups related to the MPEG-4 and MPEG-7 standards. Since February 2016, he is the JPEG Requirements Chair. He has been one of the key designers of the JPEG Pleno project which targets defining standard representations for several types of plenoptic imaging, notably light fields, point clouds and holograms. He has been developing research on point cloud clustering, coding and quality assessment, and publishing in these areas. He has contributed more than 250 papers in international journals, conferences and workshops, and made several tens of invited talks at conferences and workshops. His areas of interest are video analysis, coding, description and adaptation, and advanced multimedia services.

TMM Papers

Tuesday, July 7, 2020

TMM Papers

Time: 11:00 – 13:00
Chair: Chia-Wen Lin (National Tsing Hua University, Taiwan)

Paper
PointHop: An explainable machine learning method for point cloud classification
Min Zhang (University of Southern California); Haoxuan You (Columbia University); Pranav Kadam (University of Southern California); Shan Liu (Tencent); C. -C. Jay Kuo (University of Southern California)
A Recursive Reversible Data Hiding in Encrypted Images Method with a Very High Payload
Pauline Puteaux (Univ. Montpellier); William Puech (Univ. Montpellier)
Spectrum Characteristics Preserved Visible and Near-Infrared Image Fusion Algorithm
Zhuo Li (Beihang University); Hai-Miao Hu (Beihang University); Wei Zhang (Beihang University); Shiliang Pu (Hikvision); Bo Li (Beihang University)
Snowball: Iterative Model Evolution and Confident Sample Discovery for Semi-Supervised Learning on Very Small Labeled Datasets
Yang Li (University of Missouri); Zhiqun Zhao (University of Missouri); Hao Sun (University of Missouri); Yigang Cen (Beijing Jiaotong University); Zhihai He (University of Missouri)
Dual Neural Networks Coupling Data Regression with Explicit Priors for Monocular 3D Face Reconstruction
Xin Fan (Dalian University of Technology); Shichao Cheng (Hangzhou Dianzi University); Kang Huyan (Dalian University of Technology); Minjun Hou (Dalian University of Technology); Risheng Liu (Dalian University of Technology); Zhongxuan Luo (Dalian University of Technology)
FIVR: Fine-Grained Incident Video Retrieval
Giorgos Kordopatis-Zilos (Information Technologies Institute); Symeon Papadopoulos (Information Technologies Institute); Ioannis Patras (Queen Mary University of London)
Contextualized CNN for Scene-Aware Depth Estimation From Single RGB Image. IEEE Trans. Multimedia
Ji Liu (Beihang University); Aimin Hao (Beihang University); Qinping Zhao (Beihang University); Hong Qin (Stony Brook University)
A Physiology-based QoE Comparison of Interactive Augmented Reality, Virtual Reality and Tablet-based Applications
Conor Keighrey (Athlone Institute of Technology); Ronan Flynn (Athlone Institute of Technology); Siobhan Murray (Longford Primary Care Centre); Niall Murray (Athlone Institute of Technology)

Women in Tech

Wednesday, July 8, 2020

Women in Tech - Communication and Networking Platform

Time: 16:30 – 18:30
Chair: Laura Toni. University College London, UK

Aim and Scope

Following the tradition of sponsoring a Women in Tech event at IEEE conferences, we will hold a virtual one at ICME 2020. This year's exciting event is intended to be a communication and networking platform of the women in the community. The event is aimed at increasing and promoting visibility and recognition of women in ICME fields, promoting networking and mentoring between junior and senior researchers, and building a networking women community as legacy for future events. The event is tailored towards Ph.D. students, assistant professors, and starting researchers in various research organizations. Four outstanding speakers will be talking about their personal experience and career paths. After the talks, you will have time for virtual networking with a cross section of women in the field. Everybody is welcome, new-comers, young professionals, career-switchers/explorers, or senior folks, people who care about diversity and women in tech and those interested in learning more, or just supporting the community.

Student Program

Two key student-centred events are set to take place as part of ICME 2020 program. Both events are free to graduate students who have registered for the main conference or workshops.

Wednesday, July 8, 2020

Three Minute Thesis (3MT®) competition

Time: 16:30 – 18:00
Committee: Hantao Liu, Cardiff University, UK
                   Luka Murn, BBC R&D, UK, and DCU, Ireland
                   Najmeh Rezaei, Queen Mary University of London, UK

Overview

The 3MT competition is an interesting yet challenging way to present a graduate research thesis to a general audience in just three minutes using a single presentation slide. 3MT was first established at the University of Queensland in 2008 and has since been held at many universities around the world. For further information please visit – http://threeminutethesis.org.

This year, IET will sponsor the awards that will be given to the best 3MT presentations at ICME 2020 so that **the best 3 presentations will receive £300, £200 and £100, respectively**.

To participate in the 3MT, please submit the following registration items to info.icme2020@qmul.ac.uk by **July 3, 2020**:

- Email Subject Line: **ICME2020-3MT**
- Your CV (maximum 1 page), which should include your contact details
- A letter from your advisor confirming your student status

After registration, you will be asked to submit a pre-recorded 3-minute video of your 3MT presentation (Please note that the file must be a video file in MP4 format of 100MB max). View presentations by previous 3MT finalists (https://threeminutethesis.uq.edu.au/watch-3mt).

Video submission will open approximately one week before the start of the conference. The video presentations will be available for public during the original dates of the conference.

Sponsor: IET

Wednesday, July 8, 2020

and

Thursday, July 9, 2020

PhD Mentoring Session

Time: Wednesday: 09:00 – 11:30 & 12:00 –13:00
             Thursday: 10:00 – 13:00 & 13:30 –16:00
Committee: Hantao Liu, Cardiff University, UK
             Luka Murn, BBC R&D, UK, and DCU, Ireland
             Najmeh Rezaei, Queen Mary University of London, UK

Overview

The PhD mentoring session is an opportunity for PhD students at all stages of their research to speak to experienced and established scholars in their respective research field, ask for their opinion and advice in a 1-to-1 online video chat. Students can register for up to 3 private mentoring slots. Each mentoring session will last at least 15 minutes.

To participate in the PhD mentoring session, please submit the following registration items to info.icme2020@qmul.ac.uk by July 3, 2020:

- Email Subject Line: ICME2020-PhD Mentoring
- Your CV (maximum 1 page), which should include your contact details
- A list of up to three mentors you would like to meet
- A list of up to three questions you would like to discuss with the mentor

This year's PhD mentoring session offers the following senior academics participating as mentors:

- Professor David Bull
- Professor Darren Cosker
- Professor Raouf Hamzaoui
- Professor Patrick Le Callet
- Professor Enrico Magli
- Professor Shiwen Mao
- Professor David Marshall
- Professor Maria Martini
- Professor Noel O'Connor
- Professor Mei-Ling Shyu
- Professor Alan Smeaton
- Professor Vladan Velisavljevic
- Professor Marcel Worring

Sponsor: YouTube

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