

**The 5th International Conference on Computer
Systems and Communication Technology**

SCHEDULE

November 24-25, 2023 | Kuala Lumpur, Malaysia

<http://www.iccsct.org>

Simple Version of the Schedule

Malaysian Time (UTC/ GMT+8)

Opening Speech 10:00AM

Session 1 (Nov.24th 10:00-13:30 PM)

-Keynote Speech 10:00-12:00 AM

-Oral Presentation 12:00-13:30 PM

Photo & Halftime 13:30-14:00 PM

Session 2 (Nov.24th 14:00-17:30 PM)

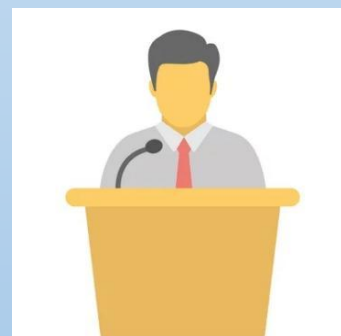
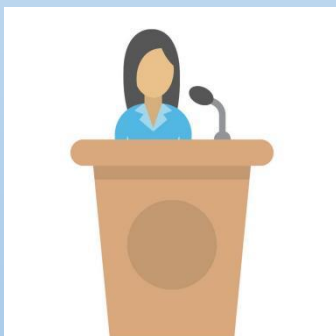
-Keynote Speech 14:00-16:00 PM

-Oral Presentation 16:00-17:30 PM

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Photo & Ending Speech



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ICCSCT 2023 (Webinar)

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Dr. Hossam Kasem, Shenzhen University, China
Prof. Xiaokun Yang, University of Houston, Clear Lake, USA
Prof. Zoran Gajic, Rutgers University, USA
Prof. Shadi Abudalfa, King Fahd University of Petroleum and Minerals, Saudi Arabia
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Dr. Abdul Ghani Albaali, Princess Sumaya University, Jordan
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Dr. Paul Craig, Xi'an Jiaotong-Liverpool University, China
Assoc. Prof. Bahman Javadi, Western Sydney University, Australia
Prof. Raja Kumar Murugesan, Taylor's University, Malaysia
Prof. Amin Beheshti, Macquarie University, Australia
Prof. Yu-Chen Hu, Providence University, Taiwan
Dr. Shekhar R, Alliance University, India
Prof. Beligiannis Grigorios, University of Patras, Greece
Assoc. Prof. Xiaojian Liu, Xi'an University of Science and Technology, China
Prof. ZhaoYang Dong, The University of New South Wales, Australia
Dr. Md. Kafiul Islam, Independent University, Bangladesh
Dr. Xujuan Zhou, University of the Southern Queensland, Australia
Dr. Xinggang Yan, University of Kent, UK
Prof. Karl Christoph Ruland, University of Siegen, Germany
Prof. Jyotsna Kumar Mandal, University of Kalyani, India
Prof. Yassine Salih-Alj, Al Akhawayn University
Asst. Prof. Cong Pu, Marshall University, USA
Prof. Bin Fu, University of Texas Rio Grande Valley, USA
Prof. James C.N. Yang, National Dong Hwa University, Taiwan
Prof. Henry Chen, Wright State University, Dayton, USA
Prof. Masashi Sugano, Osaka Prefecture University, Japan
Prof. Bob Zhang, University of Macau, China
Prof. Liming ZHANG, University of Macau, Macau, China
Asst. Prof. Xiao Chen Yuan, Macau University of Science and Technology Macau, Macau, China
Prof. Xinming Zhang, University of Science and Technology, China
Prof. Muhammad Amir, International Islamic University, Pakistan
Assoc. Prof. Ruzaini Abdullah Arshah, Universiti Malaysia Pahang
Dr. Khin Than Mya, University of Computer Studies, Myanmar
Asst. Prof. Changjiang Zhang, Wenzhou-Kean University, China
Prof. Sule Yildirim Yayilgan, Norwegian University of Science and Technology, Norway

ICCSCT 2023 (Webinar)

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Asst. Prof. Xuan (Shawn) Guo, University of North Texas, USA
Asst. Prof. Dariusz Jakóbczak, Koszalin University of Technology, Poland
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Prof. Lu Leng, Nanchang Hangkong University, China
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Asst. Prof. Yuchen Liu, North Carolina State University, USA
Asst. Prof. Pankaj Dadheech, SKIT, Jaipur, Computer Science and Engineering
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Dr.C.EZHILAZHAGAN, Vel Tech Rangarajan Dr.Sagunthala R&D Institute of Science and Technology, Avadi, Chennai
Dr.M.Ramkumar Prabhu, PERI Institute of Technology, Chennai
Dr. Mohd Aliff Afira Hj Sani, Instrumentation and Control Engineering, UniKL Malaysian Institute of Industrial Technology.

ICCSCT 2023 (Webinar)

ICCSCT 2023 will be held as Virtual conference(Webinar)

November 24-25, 2023 (UTC/GMT +8 Malaysian Time)

Nov. 24th 10:00 AM		Opening Speech
Session 1 (Nov.24th 10:00-13:30 PM)		
10:00-10:30AM	Keynote Speaker 1	Haibin Zhu
	UTC/GMT-5 Eastern Time Nov.23th 21:00-21:30PM	
10:30-11:00AM	Keynote Speaker 2	Narendra Londhe
	UTC/GMT+5:30 Indian Time Nov.24th 8:00-8:30AM	
11:00-11:30AM	Keynote Speaker 3	Sergei Gorlatch
	UTC/GMT +8 Asian Time Nov.24th 11:00-11:30AM	
11:30-12:00AM	Keynote Speaker 4	Erik Meijering
	UTC/GMT+10 Sydney Time Nov.24th 14:30-15:00PM	
12:00-12:15PM	Oral Presentation 1	Qiongjie Kou
	UTC/GMT +8 Chinese Time Nov.24th 12:00-12:15PM	
12:15-12:30PM	Oral Presentation 2	Xinman Zhang
	UTC/GMT +8 Chinese Time Nov.24th 12:15-12:30PM	
12:30-12:45PM	Oral Presentation 3	Binjian Rao
	UTC/GMT +8 Chinese Time Nov.24th 12:30-12:45PM	
12:45-13:00PM	Oral Presentation 4	Qianchen Zhou
	UTC/GMT +8 Chinese Time Nov.24th 12:45-13:00PM	

ICCSCT 2023 (Webinar)

13:00-13:15PM	Oral Presentation 5	WenTing Hao
	UTC/GMT +8 Chinese Time	Nov.24th 13:00-13:15PM
13:15-13:30PM	Oral Presentation 6	Siwei Lu
	UTC/GMT +8 Chinese Time	Nov.24th 13:15-13:30PM
Photo & Halftime 13:30-14:00 PM		
14:00-14:30PM	Keynote Speaker 5	Muazzam Ali Khan Khatt
	UTC/GMT+5 Pakistan Time Nov.24th 11:00-11:30AM	
14:30-15:00PM	Keynote Speaker 6	Rossi Setchi
	UTC/GMT 0 UK Time	Nov.24th 6:30-7:00AM
15:00-15:30PM	Keynote Speaker 7	Giancarlo Guizzardi
	UTC/GMT +1 Germany Time	Nov.24th 8:00-8:30AM
15:30-16:00PM	Keynote Speaker 8	Sudan Jha
	UTC/GMT +5:45 Nepal Time	Nov.24th 13:15-13:45PM
16:00-16:15PM	Oral Presentation 7	Andrii Krutsylo
	UTC/GMT +1 Polish Time	Nov.24th 9:00-9:15AM
16:15-16:30PM	Oral Presentation 8	Yahua Wu
	UTC/GMT +8 Chinese Time	Nov.24th 16:15-16:30PM
16:30-16:45PM	Oral Presentation 9	Amirah Alharbi
	UTC/GMT+3 Saudi Arabian Time	Nov.24th 11:30-11:45AM

ICCSCT 2023 (Webinar)

16:45-17:00PM	Oral Presentation 10	Si Qin
	UTC/GMT +8 Chinese Time	Nov.24th 16:45-17:00PM
17:00-17:15PM	Oral Presentation 11	Ayaulym Sairanbekova
	UTC/GMT +8 Kazakhstan Time	Nov.24th 15:00-15:15PM
17:15-17:30PM	Oral Presentation 12	Yonghao Liu
	UTC/GMT +8 Chinese Time	Nov.24th 17:15-17:30PM

ICCSCT 2023 (Webinar)

NOTE:

1. ICCSCT 2023 will be held as webinar on November 24, 2023 (UTC/GMT+8 Malaysian Time 10:00 AM) through **ZOOM platform**. Webinar portal will be opened **20 minutes** in advance.
2. Please join the Webinar **30 minutes** in advance at your presentation time.
3. Electronic Certificate of Participation can be offered via email after your presentation.
4. Please send PPT files of your presentation to the secretary before conference date.
5. If you want to deliver oral presentation or poster but your paper is not in the session list, please contact us by Email: iccsct@iccsct.org

PowerPoint or PDF files Duration of each Presentation:

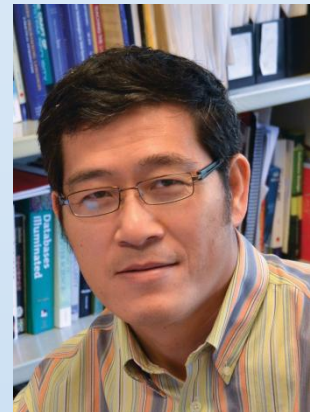
1. Keynote Speech: 30 Minutes of Presentation and 3 Minutes of Q&A
2. Oral Presentation: 15 Minutes of Presentation and 5 Minutes of Q&A

Please control your speech time within the corresponding time,thanks.

Session 1 Keynote Speech

Keynote Speech 1 10:00-10:30AM (Eastern Time Nov.23th 21:00-21:30PM)

Dr. Haibin Zhu is a Full Professor and the Coordinator of the Computer Science Program, the Founding Director of the Collaborative Systems Laboratory, a member of Arts and Science Executive Committee, Nipissing University, Canada. He is an affiliate professor of Concordia Univ. and an adjunct professor of Laurentian Univ., Canada. He received a BSc degree in computer engineering from the Institute of Engineering and Technology, China (1983), and MSc (1988) and PhD (1997) degrees in computer science from the National Univ. of Defense Tech. (NUDT), China. He was the chair of the Department of Computer Science and Mathematics, Nipissing University, Canada (2019-2021), a visiting professor and special lecturer in the College of Computing Sciences, New Jersey Institute of Technology, USA (1999-2002) and a lecturer, an associate professor and a full professor at NUDT (1988-2000). He has accomplished (published or in press) over 230+ research works including 40+ IEEE Transactions articles, six books, five book chapters, four journal issues, and four conference proceedings. He is a fellow of I2CICC (International Institute of Cognitive Informatics and Cognitive Computing), a senior member of IEEE, a senior member of ACM, a full member of Sigma Xi, and a life member of CAST-USA (Chinese Association of Science and Technology, USA).



He is serving as Vice President, Systems Science and Engineering (SSE) (2023-), a member-at-large of the Board of Governors (2022-), and a co-chair (2006-) of the technical committee of Distributed Intelligent Systems of IEEE Systems, Man and Cybernetics (SMC) Society (SMCS), Editor-in-Chief of IEEE SMC Magazine (2022), Associate Editor (AE) of IEEE Transactions on SMC: Systems (2018-), IEEE Transactions on Computational Social Systems(2018-), Frontiers of Computer Science (2021-), and IEEE Canada Review (2017-). He was AE of IEEE SMC Magazine (2018-2021), Associate Vice President (AVP), SSE (2021), IEEE SMCS, a Conference (Co-)Chair and Program (Co-)Chair for many international conferences, and a PC member for 140+ academic conferences.

Session 1 Keynote Speech

He is the founding researcher of Role-Based Collaboration and the creator of the E-CARGO model. His research monograph E-CARGO and Role-Based Collaboration can be found <https://www.amazon.com/CARGO-Role-Based-Collaboration-Modeling-Problems/dp/1119693063>. The accompanying codes can be downloaded from GitHub: <https://github.com/haibinnipissing/E-CARGO-Codes>. He has offered 20+ keynote and plenary speeches for international conferences and 90+ invited talks internationally. His research has been being sponsored by NSERC, IBM, DNDC, DRDC, and OPIC.

He is the recipient of the best paper award in international collaboration from the 25th Int'l conf. on Computer-Supported Cooperative Work in Design, Hangzhou, China, 2022, the meritorious service award from IEEE SMC Society (2018), the chancellor's award for excellence in research (2011) and two research achievement awards from Nipissing University (2006, 2012), the IBM Eclipse Innovation Grant Awards (2004, 2005), the Best Paper Award from the 11th ISPE Int'l Conf. on Concurrent Engineering (ISPE/CE2004), the Educator's Fellowship of OOPSLA'03, a 2nd class National Award for Education Achievement (1997), and three 1st Class Ministerial Research Achievement Awards from China (1997, 1994, and 1991).

His research interests include Collaboration Systems, Human-Machine Systems, Computational Social Systems, Collective Intelligence, Multi-Agent Systems, Software Engineering, and Distributed Intelligent Systems.

Speaker: Haibin Zhu

Title: Computational Social Simulation using E-CARGO

Abstract:

Humans are social beings and people cannot live alone. Computational social simulation is a way to reproduce a real-world society and study the behavior of people in that society using computer-based systems. Computational social simulation is a long-term, cutting-edge topic in the interdisciplinary field where information technology, computer science, social science, and sociology overlap.

Role-Based Collaboration (RBC) has been proposed as a computational approach to facilitating collaboration. It utilizes roles as underlying mechanisms to support collaboration by taking advantage of roles. It is divided into several phases: role negotiation, role assignment, role execution, and role transfer. RBC and its related components are an abstract model, which is a perfect mapping for social activities, because Social and economic systems are typical collaboration systems.

The Environments – Classes, Agents, Roles, Groups, and Objects (E-CARGO) model, which has been developed into a general model for complex systems, have a good match for the requirements of computational social simulations. In this speech, we establish the fundamental requirements for social simulation and demonstrate that RBC, E-CARGO, Group Role Assignment (GRA), and Adaptive Collaboration (AC) methodologies and models are highly qualified to meet these requirements. Based on RBC, E-CARGO and GRA, we present a new approach to social simulation with E-CARGO related components, models, and algorithms.

This speech also illustrates several interesting case studies of computational social simulations: 1) a comparison between collectivism and individualism; 2) how to acquire the preferred position in a team of collectivism; 3) why the US president opposes globalization; and 4) A social paradox for Pareto 80/20 rule. Through these case studies, E-CARGO has been verified to be a novel promising methodology for social simulation by competing with conventional agent models.

Our continuous research on RBC and E-CARGO informs that social, political and economic phenomena can be explained by GRA, which demonstrates a collective team effort. GRA with constraints and GRA with multiple objectives can be further applied to simulate more complex phenomena in these areas. It is believed that there are numerous opportunities for research along with the presented directions.

Session 1 Keynote Speech

Keynote Speech 2 10:30-11:00AM (Indian Time Nov.24th 8:00-8:30AM)

Dr Narendra D. Londhe is presently working as Associate Professor in the Department of Electrical Engineering of National Institute of Technology Raipur, Chhattisgarh INDIA. He completed his B.E. from Amravati University in 2000 followed by MTech and Ph.D. from Indian Institute of Technology Roorkee in the year 2006 and 2011 respectively. He has 14 years of rich experience in academics and research. He has published more than 150 articles in recognized journals, conferences, and books. His main areas of research include Medical Signal and Image Processing, Biomedical Instrumentation, Speech Signal Processing, Biometrics, Intelligent Healthcare, Brain Computer Interface, Artificial Intelligence and Pattern Recognition. He has been awarded by organizations like Taiwan Society of Ultrasound in Medicine, Ultrasonics Society of India, and NIT Raipur. He is an active member of different recognized societies from his areas of research including senior membership of IEEE.



Speaker: Narendra D. Londhe

Title:Devanagari Script based P300 Speller using Brain Computer Interface

Abstract:

The P300 Speller stands as an application of brain-computer interface (BCI) technology, specifically designed for individuals with neuromuscular disabilities. Furthermore, Devanagari script-based P300 spellers have been developed to cater to native users, recognizing the importance of facilitating communication in their mother tongue. The conventional workflow of a P300 speller encompasses the creation of external stimuli, the collection of brain activity data, signal preprocessing, feature extraction, differentiation between P300 and non-P300 signals, and the identification of target characters. P300 classification is a pivotal phase marked by its inherent variability and dynamic nature. Traditional machine learning approaches for P300 detection have relied on manual feature engineering, which demands a strong domain knowledge. More recently, deep learning architectures have been integrated into P300 Spellers, leading to notable performance improvements. However, these models require extensive training on multi-trial data, limiting their real-time adaptability and increasing cognitive load on users. Various architectures, including shallow and compact networks, have been explored for P300 classification. Nevertheless, these streamlined models often struggle with single/few-trial data. Issues like data imbalance and channel redundancy pose significant challenges for single-trial detection. Our recent efforts in this domain are centered on achieving a harmonious equilibrium between computational complexity and communication speed. This objective is pursued through the adoption of compact models tailored for the detection of single-trial event-related potentials (ERPs). The ultimate aim is to create a streamlined system that can be effortlessly implemented and demonstrates exceptional proficiency in rapidly detecting single-trial ERPs, thereby significantly enhancing the speed of communication. This advancement holds particular promise for individuals affected by motor neuron diseases, enabling them to communicate more rapidly and effectively.

Session 1 Keynote Speech

Keynote Speech 3 11:00-11:30AM (Asian Time Nov.24th 11:00-11:30AM)

Prof. Sergei Gorlatch is Full Professor of Computer Science at the University of Muenster (Germany) since 2003. Earlier he was Associate Professor at the Technical University of Berlin, Assistant Professor at the University of Passau, and Humboldt Research Fellow at the Technical University of Munich, all in Germany. Prof. Gorlatch has more than 200 peer-reviewed publications in renowned international books, journals and conferences. He was principal investigator in several international research and development projects in the field of software for parallel, distributed, Grid and Cloud systems and networking, funded by the European Commission and by German national bodies.



Speaker: Sergei Gorlatch

Title:Future Applications Based on Mobile Cloud and Software-Defined Networks

Abstract:

We consider an emerging class of challenging software applications called Real-Time Online Interactive Applications (ROIA). ROIA are networked applications connecting a potentially very high number of users who interact with the application and with each other in real time, i.e., a response to a user's action happens virtually immediately. Typical representatives of ROIA are multiplayer online computer games, advanced simulation-based e-learning and serious gaming. All these applications are characterized by high performance and QoS requirements, such as: short response times to user inputs (about 0.1-1.5 s); frequent state updates (up to 100 Hz); large and frequently changing numbers of users in a single application instance (up to tens of thousands simultaneous users). This talk will address two challenging aspects of software for future Internet-based ROIA applications: a) using Mobile Cloud Computing for allowing high application performance when a ROIA application is accessed from multiple mobile devices, and b) managing dynamic QoS requirements of ROIA applications by employing the emerging technology of Software-Defined Networking (SDN).

Session 1 Keynote Speech

Keynote Speech 4 11:30-12:00PM (Sydney Time Nov.24th 14:30-13:00PM)

Professor Erik Meijering leads the Computer Vision Group in the School of Computer Science and Engineering at the University of New South Wales (UNSW), Sydney, Australia. He has >20 years of experience in developing advanced computational methods and tools for efficient and reliable quantitative analysis of biomedical imaging data. These methods are increasingly based on artificial intelligence approaches involving machine and deep learning. He is a Fellow of the IEEE since 2019. Before moving to UNSW in 2019, he worked in various engineering institutes and university medical centers across Europe, including Delft University of Technology (as an MSc student) and Utrecht University (as a PhD student) in the Netherlands, the Swiss Federal Institute of Technology in Lausanne (as a Postdoc), and Erasmus University Medical Center in the Netherlands (as an Assistant Professor and later Associate Professor). He is a multidisciplinary scientist-engineer with a passion to translate computer science theories and mathematical concepts into powerful algorithms for the advancement of medicine and biology. Over the years his group has developed advanced solutions for image restoration, super-resolution, registration, object detection, segmentation, quantification, classification, and tracking, and has produced various image analysis software tools used by thousands worldwide. In addition to his academic work, he was/is active internationally as a member of the IEEE Signal Processing Society Technical Committee on Bio Imaging and Signal Processing (BISP, 2005-2010, 2016-2020, Chair 2018-2019), the IEEE Engineering in Medicine and Biology Society Technical Committee on Biomedical Imaging and Image Processing (BIIP, since 2007), and the cross-Society IEEE Life Sciences Technical Community (LSTC, 2018-2020). He was/is an Associate Editor for the IEEE Transactions on Medical Imaging (since 2004), Biological Imaging (since 2020), International Journal on Biomedical Imaging (2006-2009), and IEEE Transactions on Image Processing (2008-2011), and has co-edited various journal special issues, including for the IEEE Transactions on Image Processing (2005) and the IEEE Signal Processing Magazine (2015, 2022).



Session 2 Keynote Speech

Also, he has co-organized three international benchmarking competitions (Particle Tracking Challenge 2012, Cell Tracking Challenge since 2013, BigNeuron Project since 2015), and various conferences in the field, most notably the IEEE International Symposium on Biomedical Imaging (ISBI, especially 2006, 2010, 2018 as Technical Program Chair) and the International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI 2020 as Workshops Chair), and served/serves on a great variety of other conference, advisory, and review boards.

Speaker: Erik Meijering

Title: Artificial Intelligence in Biomedical Image Analysis

Abstract:

Advanced biomedical imaging technologies play a key role in both healthcare and the life sciences, as they allow visualizing the structure and function of organs, tissues, cells, and even single molecules with very high sensitivity and specificity. Biomedical imaging devices typically generate vast amounts of multiparametric spatiotemporal imaging data, containing much more relevant and subtle information than can be processed by humans, even if they are experts. Hence there is an ever-growing need for computational methods to analyze these data automatically, not only to cope with the sheer volume of the image data sets, but also to reach a higher level of accuracy, objectivity, and reproducibility. To this end we develop advanced computer vision methods for a wide range of problems, including restoration, enhancement, super-resolution, and registration of images, as well as detection, segmentation, quantification, classification, and tracking of objects in these images. To cope with the high complexity of these problems, we rely increasingly on machine learning approaches for this, in particular deep learning using artificial neural networks. In addition to developing new methods, we are strong proponents of evaluating and benchmarking methods thoroughly and making them publicly available. This talk will highlight some of the methods we have been developing, especially for the analysis of cellular and intracellular dynamic processes, to facilitate biological studies of the molecular mechanisms of life in health and disease.

Session 1 Oral Presentation

Oral Presentation 1 12:00 - 12:15PM (Chinese Time Nov.24th 12:00-12:15PM)

Title: An Effective and Efficient Method for Detecting Defective Areas of Auto Parts Based on CNNs

Speaker: Qiongjie Kou

Abstract: We propose a method for identifying the flaws on the product surface using a deep Convolutional Neural Network (CNN), making them more efficient and effective. Our approach is Gradient-weighted Flaw Detecting (GWFD), uses the gradients of the significant layers (identify the flaws in a CNN) to produce a localization map identifying the flaw areas on the product surface in the image for detecting industrial products. The problem with manual inspection is that it requires human and material resources, and accuracy cannot be guaranteed. The crux of identifying the flaws on the product surface is that the method can extract the features of the flaws and achieve a precise location. Unlike previous surface detection methods, GWFD combines an attention mechanism with edge detection to precisely focus on the flaw area of the product surface. At the same time, simple heuristic fine-tuning and reinforcement learning are applied during the training stage. Experiments show that GWFD achieves the precise location and detection of the flaws compared with other methods such as SIFT, KAZE, SSD MobileNet (V3), and SNet. GWFD helps users successfully inspect the flawed area of auto parts and has always been an industry pioneer for identifying flawed areas on the product surface. We hope that our work will promote and complete the practical application in more production lines.

Oral Presentation 2 12:15PM-12:30PM (Chinese Time Nov.24th 12:15-12:30PM)

Title: Heterogeneous distributed control strategy for UAV-USV at fixed-time

Speaker: Xinman Zhang

Abstract: Focusing on the collaborative control of quadrotor Unmanned Aerial Vehicles (UAVs) and underactuated Unmanned Surface Vessels (USVs), this article presents a cooperative control algorithm based on fixed-time theory. By constructing an adaptive neural network to approximate model uncertainty and unknown disturbances in the system, this algorithm satisfies the coordinated motion constraints between UAVs and USVs, while achieving group control objectives such as trajectory tracking. Additionally, this article employs the fixed-time method in the Lyapunov function to analyze system stability, ensuring that the cooperative control error converges within a fixed time, ultimately enabling fast and stable tracking of targets between UAVs and USVs. Finally, the effectiveness of the proposed algorithm is verified through numerical simulation experiments

Session 1 Oral Presentation

Oral Presentation 3 12:30PM-12:45PM (Chinese Time Nov.24th 12:30-12:45PM)

Title: A Computer Vision-Based Framework for Burst Heap Block Degree Analysis

Speaker: Binjian Rao

Abstract: Control the cost and efficiency of the blasting stage for the overall cost of mining and efficiency control has a significant impact, usually the size of the rock mass after blasting and its distribution, is the main parameter for evaluating the effectiveness of blasting. Unlike the time-consuming and labor-intensive method of manual sieving, we can use computer vision methods to more easily obtain the specific value of a certain amount of parameters of the rock mass degree of the blast pile, in order to optimize the blasting parameters and thus achieve the reverse control of the pre-blast to do a fundamental and important step.

Oral Presentation 4 12:45PM-13:00PM (Chinese Time Nov.24th 12:45PM-13:00PM)

Title: Research on Low Contrast Oil Spill Target Detection Algorithm

Speaker: Qianchen Zhou

Abstract: The oil spill accidents on the sea surface pose a severe threat to the marine environment and human health. This paper proposes a novel Semantic Segmentation Network (SSN) for processing oil spill images so that low-contrast oil spills on the sea surface can be accurately identified. After the detection accuracy and realtime performance of the current SSNs are compared, the basic network architecture of DeeplabV3+ based target detection is analyzed. The standard convolution is replaced by the Omni-dimensional Dynamic Convolution (ODConv) in the Ghost Module Depth-Wise separable Convolution (DWConv) to further enhance the feature extraction ability of the network. Furthermore, a new DeeplabV3+ based network with ODGhostNetV2 is constructed as the main feature extraction module, and an Adaptive Triplet Attention (ATA) module is deployed in the encoder and decoder at the same time. This not only improves the richness of semantic features but also increases the following receptive fields of the network model. ATA integrates the Adaptively Spatial Feature Fusion (ASFF) module to optimize the weight assignment problem in the feature map fusion process. The ablation experiments are conducted to verify the proposed network which show high accuracy and good real-time performance for the oil spill detection

Session 1 Oral Presentation

Oral Presentation 5 13:00PM-13:15PM (Chinese Time Nov.24th 13:00PM-13:15PM)

Title: Application research of computer statistics system in the construction of public sports service system for national fitness in free trade port

Speaker: WenTing Hao

Abstract: The reconstruction of public sports service system is the core issue facing the construction of free trade port. Through the investigation of the status quo of public sports service system in the construction of free trade port, the gap between Hainan free trade port and international and domestic public sports service system is concluded through computer statistical analysis and research. And th[Corresponding Author: Qiuxiang Xie, 13006025126@163.com]en through the expert demonstration, under the leadership and support of the government, a series of public sports service system and industrial development policies and measures suitable for the construction of free trade ports are formulated.

Oral Presentation 6 13:15PM-13:30PM (Chinese Time Nov.24th 13:15PM-13:30PM)

Title: Semiconductor Material Porosity Segmentation in Flame Retardant Materials SEM Images using Data Augmentation and Transfer Learning

Speaker:Siwei Lu

Abstract: Non-halogenated flame retardants are becoming the trend in the development of polymer flame retardant materials due to their high flame retardant efficiency and low generation of toxic smoke gases. Non-halogenated flame retardants achieve flame retardancy by forming a dense char layer and generating non-combustible gases, with the micro-porous structure of the char residue being crucial for studying the flame retardant mechanism. This study focuses on the segmentation of pores in scanning electron microscopy (SEM) images of the combustion char layer of non-halogenated flame retardant materials, which are cropped and labeled to form a unified dataset. We investigate the SEM image pore segmentation using data augmentation and transfer learning, addressing the challenge of limited sample size. We explore the impact of different data augmentation techniques and transfer learning on model performance. Additionally, we compare convolutional neural network (CNN) segmentation algorithms with traditional segmentation methods. Experimental results demonstrate that CNN segmentation algorithms outperform traditional methods in terms of segmentation accuracy. Offline data augmentation enhances model stability compared to online data augmentation, and adopting transfer learning significantly improves model¹⁹performance metrics. Specifically, when training with VGG backbone weights through transfer learning, the average pixel accuracy and average intersection over union reach 94.49% and 89.88%, respectively.

Photo & Halftime

13:30-14:00 AM



Session 2 Keynote Speech

Keynote Speech 5 14:00-14:30AM (Pakistan Time Nov.24th 11:00-11:30AM)

Prof. Muazzam Ali Khan Khattak is currently serving as Director Science & Technology as well Director ICESCO Chair Data Analytics and Edge Computing at Quaid-i-Azam University, Islamabad. Beside that he is also adjunct Professor at School of Computing and Engineering, University of Missouri, KC, USA.

He is an outstanding faculty member of computer science department and have made significant contributions in research and designing advance computing courses on most modern lines for the syllabi of PhD, Master ' s and Bachelor in Computer Science programs at Higher Education Commission Pakistan, National University of Sciences & Technology, Islamabad, (NUST), Department of Computing, NUST SEECS, NUST College of Electrical & Mechanical Engineering (CEME) and Department of Computer Science, Abdul Wali Khan University, Mardan. Currently his personal endeavors have been vitally instrumental in transforming department of computer science into a regional center of excellence to offer state-of-the-art indigenous research and academic services to the nation.

Earlier Dr. Khattak served as Associate Dean of Computing Department at NUST School of Electrical Engineering and Computer Science (SEECS) 2017-2020, Post graduate Head, Department of Computer Engineering, NUST CEME 2013-2016 and Chair Department of Computer Science, AWKU, Mardan 2012-2013. During his tenure as Associate Dean Computing (S-HoD), NUST, the computer science program attained the top position at national level and 138th position at international level.

Dr. Khattak started new degree programs of MS and PhD in Data Science, Artificial intelligence and machine learning. He also played a vital role in establishment of Computer Science Department at NUST Quetta Campus and at AWK University Mardan. Dr. Khattak contributed and also led cutting edge scientific research projects imbued with sound potential for national progress. He is credited with establishing research collaboration with many international universities such as School of Computing & Electrical Engineering (SCE), University of Missouri, Kansas City (UMKC), USA, Institute of Distributed Systems, University of Ulm, Germany, Kansas State University, Kansas USA, The Korea Advanced Institute of Science and Technology (KAIST), Korea, Linnaeus University (LNU), Sweden and Kazakh British Technical University, Kazakhstan.



Session 1 Keynote Speech

He carried out his PhD research and Postdoc Research Fellowship at University of Missouri Kansas City (UMKC), USA and International Islamic University, Islamabad. Despite his involvement in multiple professional and administrative activities he has copiously contributed to prestigious scientific journals, seminars/conferences both at national/international levels, and has 210 research papers with more than 420+ Impact factor and book chapters to his credit having 3400+ citations. He also organized many international Conferences such as C-CODE-2017, HONET-ICT 2018, CCODE 2019, HONET-ICT 2019, HONET-ICT 2020, HONET-ICT 2021 and HONET-ICT 2022. Apart from being a Senior Member of IEEE, Senior Member Pakistan Academy of Sciences he is also senior member of National Computing Education Accreditation Council (NCEAC), member of HEC Accreditation & Attestation Division for Computing Programs. He is also a technical reviewer of more than 40 national and international conferences and journals. He has been awarded grant of 25 Million by ICESCO and 06 Million by Huawei International for establishment of Huawei Academy at Quaid-i-Azam University, Islamabad.

Speaker: Muazzam Ali Khan Khattak

Title: Artificial Intelligence in Education: Challenges and Opportunities

Abstract:

The introduction to artificial intelligence (AI) in education can be a powerful tool for students and teachers alike. AI can help automate activities, improve access to learning resources, streamline grading processes, and personalize student learning experiences. By leveraging the latest advancements in technology – such as machine learning algorithms and natural language processing capabilities – educators are able to unlock new opportunities for personalized instruction and improved assessment data analysis. With better-tailored educational content being delivered through AI solutions, classrooms have become more engaging with interactive features such as chatbots and virtual reality simulators allowing students to explore complex concepts without leaving their seats.

Session 2 Keynote Speech

Keynote Speech 6 14:30-15:00PM (U.K. Time Nov.24th 6:30-7:00AM)

Prof. Rossitza Setchi (FIET, FIMechE, FBCS, SMIEEE) is Fellow of the Learned Society of Wales, Professor in High-Value Manufacturing and Director of the Research Centre in AI, Robotics and Human-Machine Systems (IROHMS) at Cardiff University. She has a track record of research in AI, robotics, industrial sustainability, manufacturing and Industry 4.0, and, in particular, has built an international reputation for excellence in knowledge-driven symbolic AI, computational semantics and human-machine systems. Her track record includes over 260 peer reviewed publications, external grant support totalling more than £25 million and the supervision of more than 30 PhD students. She has collaborated with over 50 universities and 30 industrial companies from more than 20 countries in Europe, Asia and Australia. She has provided research leadership on over 30 collaborative projects funded by UK and overseas funding bodies, including the Royal Society, Royal Academy of Engineering, EPSRC and the European Commission.



Speaker: Rossi Setchi

Title: Human-like AI

Abstract:

This paper will introduce the three waves of AI; she will explain in detail one of her projects on prior art patent examinations to illustrate the limitations of the current AI and statistical Machine Learning and the need for more advanced human-like computing systems that reason the way humans think and can adapt to context (humans, environment, task) in real time. The inscrutability of statistically based machine reasoning limits applications in many areas where the outcome has impact on humans (e.g. law, safety-critical applications, medical diagnostics, credit assessment, insurance, etc.). The future involves considerations of mental structures, cognitive processes, behaviours and complex decision making, using semantics to reason with and about meaning, learning from small datasets, exploratory learning (e.g. curiosity-driven systems), exploring trust, forgetfulness, trusted autonomy, and dealing with bias in machine learning. Finally, she will discuss the main research challenge, and the need for more acceptable, predictable and explainable AI.

Session 2 Keynote Speech

Keynote Speech 7 15:00-15:30PM (Germany Time Nov.24th 8:00-8:30AM)

Prof. Giancarlo Guizzardi is a Full Professor of Software Science and Evolution as well as Chair and Department Head of Semantics, Cybersecurity & Services (SCS) at the University of Twente, The Netherlands. He is also an Affiliated/Guest Professor at the Department of Computer and Systems Sciences (DSV) at Stockholm University, in Sweden. He has been active for nearly three decades in the areas of Formal and Applied Ontology, Conceptual Modelling, Enterprise Computing and Information Systems Engineering, working with a multi-disciplinary approach in Computer Science that aggregates results from Philosophy, Cognitive Science, Logics and Linguistics. He is the main contributor to the Unified Foundational Ontology (UFO) and to the OntoUML modeling language. Over the years, he has delivered keynote speeches in several key international conferences in these fields (e.g., ER, CAiSE, BPM, IEEE ICSC). He is currently an associate editor of a number of journals including Applied Ontology and Data & Knowledge Engineering, a co-editor of the Lecture Notes in Business Information Processing series, and a member of several international journal editorial boards. He is also a member of the Steering Committees of ER, EDOC, and IEEE CBI, and of the Advisory Board of the International Association for Ontology and its Applications (IAOA). Finally, he has recently been inducted as an ER fellow.



Speaker: Giancarlo Guizzardi

Title: Semantic Models for Trustworthy Systems: A Hybrid Intelligence Augmentation Program

Abstract:

Cyber-human systems are formed by the coordinated interaction of human and computational components. In this talk, I will argue that these systems can only be designed as trustworthy systems if the interoperation between their components is meaning preserving. For that, we need to take the challenge of semantic interoperability between these components very seriously. I will discuss a notion of trustworthy semantic models and defend its essential role in addressing this challenge. Finally, I will advocate that engineering and evolving these semantic models as well as the languages in which they are produced require a hybrid intelligence augmentation program resting on a combination of techniques including formal ontology, logical representation and reasoning, crowd-sourced validation, and automated approaches to mining and learning.

Session 2 Keynote Speech

Keynote Speech 8 15:30-16:00PM

(Nepal Time Nov.24th 13:15-13:45PM)

Prof. Sudan Jha. With a total 22+ years of teaching, research and industrial experience, Prof. Sudan Jha is a Senior IEEE member; ACM member, Editor-in-Chief, International book series editor, acclaimed Principal Scientist, International Keynote Speaker. He has delivered a number of Keynote Speeches / expert talks around the world. Presently working as a Professor in Department of Computer Science & Engineering, Kathmandu University, Nepal; bears experiences from top notch universities like KIIT University, Chandigarh University, Christ University, etc. Apart from these, he has working experiences as ‘technical director in Nepal television’, ‘Principal in Nepal College of IT’, ‘Individual Consultant in Nepal Telecom Authority’. He is passionate about quality of higher education and is working extensively on smart platforms.



Research:

-80+ accepted and published research papers, book chapters in reputed SCI, SCIE, indexed refereed journals and conferences.

-Editor-in-Chief in an international journal; Guest Editors in SCIE/ESCI/SCOPUS indexed journals. Three patents in his name.

-Authored / edited 5 books for recent advanced topics in IoT, 5G, AI for the publishers - Elsevier, CRC and AAP.

Accomplished two international funded projects.

In addition, he has been resource person in several national / international faculty development programs and Short term training programs for faculties and students. Guest Editor in several SCIE and ESCI journals, reviewer/TPC member in various conferences and journals.

He is also an IBM certified Engineer on “Microservices Architecture And Implementation”; Certified Data Scientist with proficiency in Python; NASSCOM and Ministry of Electronics and Information Technology, Govt. of India certified “Machine Learning - Linear Regression”, Certified in “Foundations of Artificial Intelligence” by SkillsUp.

His research area of interest includes Internet of Things, Artificial Intelligence, Machine Learning (Deep Learning), Neutrosophic theory and Neutrosophic Soft Set Systems.

Session 2 Keynote Speech

Speaker: Sudan Jha

Title: Deep Learning-Based Image Classification for IoT Enabled UAVs in Remote Sensing Applications

Abstract:

Drones, along with smart devices connected to the internet, are now powerful tools for gathering information in various fields like keeping an eye on the environment, helping with farming, and managing disasters. By combining data collected from drones with ground sensors, we get a complete picture of the surroundings, which is really helpful for analyzing pictures. This talk introduces one of such method to automatically classify images taken by drones in collaboration with smart devices. The goal of this method is to identify and categorize different aspects in the images.

Session 2 Oral Presentation

Oral Presentation 7 16:00-16:15PM (Polish Time Nov.24th 9:00-9:15AM)

Title: Evaluating Continual Learning: A Detailed Survey of Performance Metrics

Speaker: Andrii Krutsylo

Abstract: Continual learning, an emerging paradigm within machine learning, challenges models to learn from a stream of continuously evolving data while avoiding catastrophic forgetting. This talk offers a comprehensive overview of the metrics used to evaluate continual learning systems. We begin by describing the unique challenges of continual learning, such as knowledge retention, transfer, and plasticity. Following this, we methodically categorize and analyze various metrics, including average accuracy, forgetting, knowledge retention, forward and backward transfer, among others. Our review also addresses recent advances and proposes a structured framework for metric selection based on specific continual learning scenarios. The goal is to provide a clear, navigable map for researchers and practitioners in selecting appropriate metrics that align with their specific continual learning objectives, thereby contributing to the effective evaluation and advancement of continual learning systems.

Oral Presentation 8 16:15-16:30PM (Chinese Time Nov.24th 16:15-16:30PM)

Title: Research on Monocular Vision Target Detection and Localization under Nonorthographic Conditions

Speaker: Yahua Wu

Abstract: Aiming at the problem of target localization in monocular vision, this paper proposes a nonlinear target localization method under non-orthographic conditions. First, a monocular camera is used to capture the image, and a novel YOLOv7-based network framework is constructed to detect the targets in the image. Then, based on the principle of aperture imaging, the imaging models of orthophotos and non-orthophotos are established, and the nonlinear relationship between pixel coordinates and world coordinates in the image is deduced to calculate the relative position coordinates of the target. To verify the effectiveness of this nonlinear imaging model, ship targets of different shapes and numbers are selected for verification. The experimental results show that the target positioning accuracy of monocular vision can reach more than 90% under nonorthographic conditions.

Session 2 Oral Presentation

Oral Presentation 9 16:30-16:45PM (Saudi Arabian Time Nov.24th 11:30-11:45AM)

Title: Improving Mass Gathering Management using Process Mining Techniques

Speaker: Amirah Alharbi

Abstract: Crowd management is a significant topic especially for countries that support gathering events frequently. The Kingdom of Saudi Arabia hosts and manages one of the world class annual religious gatherings known as “pilgrimage” . Several challenges are raised for managing and controlling such mass gathering event. In this paper we propose a comprehensive framework for event processes modelling and management. The framework consists of four main stages starts with acquiring temporal data and ends by modelling different processes of the event. The main contribution of this work is to demonstrate how process mining techniques can be used innovatively to model the movement flow of crowd. Synthetic data is used to show a proof-of-concept of the proposed framework and the applicability of using it in modelling and monitoring real crowd movement scenarios.

Oral Presentation 10 16:45-17:00PM (Chinese Time Nov.24th 16:45-17:00PM)

Title: Computer Vision Enabled Building Digital Twin Using Building Information Model

Speaker: Si Qin

Abstract: A building digital twin (BDT) can maintain an up-to-date digital model reflecting physical world conditions and has become necessary for building applications. Recent studies on the BDT employed the Internet of Things to sense physical-world conditions. Although cameras are one of the most widely used facilities in buildings, their adoption in the BDT remains unexplored. This report include two sections. (1) presented a novel computer-vision (CV)-enabled BDT scheme using building information modeling (BIM) taking camera videos as input, which addresses the dimension, coordinate system, and object inconsistencies between BIM and camera videos. (2) presented a BIM-based digital twin prediction scheme for indoor distribution lines that automates distribution wiring to improve the efficiency of BIM-based electrical system design and delivery. This report explores a BDT scheme on top of BIM using CV. It is anticipated to inspire more intelligent studies in smart buildings jointly employing both CV and BIM.

Session 2 Oral Presentation

Oral Presentation 11 17:00-17:15PM (Kazakhstan Time Nov.24th 15:00-15:15PM)

Title: The use of Python, Owlready, Sparql processing the words ontological model of public political discourse

Speaker: Ayaulym Sairanbekova

Abstract: The article describes a technology processing ontological model of words in public political discourse. The research task is developing an information question-answering system of political discourse in Kazakh language. The Python programming language, Sparql data-query language, and Owlready module are used to develop the system.

Oral Presentation 12 17:15-17:30PM (Chinese Time Nov.24th 17:15-17:30PM)

Title: UDP-YOLO+IMPROVED DCP:HIGH EFFICIENCY AND REAL-TIME PERFORMANCE OF AUTONOMOUS DRIVING TECHNOLOGY

Speaker: Yonghao Liu

Abstract: In recent years, autonomous driving technology has gradually appeared in our field of vision. It senses the surrounding environment by using radar, laser, ultrasonic, GPS, computer vision and other technologies, and then identifies obstacles and various signboards, and plans a suitable path to control the driving of vehicles. However, there will be some problems when this technology is applied in foggy environment, such as the low probability of recognizing objects, or the fact that some objects cannot be recognized due to the fog's fuzzy degree makes the planned path wrong. In view of this defect, and considering that automatic driving technology needs to respond quickly to objects when driving, this paper extends the prior defogging algorithm of dark channel, and proposes udp-yolo network to apply it to automatic driving technology. This paper is mainly divided into two parts: 1. Image processing: firstly, the data set is discriminated whether there is fog or not, then the fogged data set is defogged by defogging algorithm, and finally, the defogged data set is subjected to adaptive brightness enhancement; 2. Target detection: udp-yolo network proposed in this paper is used to detect the defogged data set. Through the observation results, it is found that the performance of the model proposed in this paper has been greatly improved while balancing the speed.

NOTE

1. If you would like to deliver oral presentation but your paper is not in the session list, please contact us!
2. If you have any further questions or suggestion, please feel free to contact us!

Email: iccsct@iccsct.org or committee@iccsct.org

Looking forward to your speech!

Thanks again for all your great attention and kind support to ICCSCT 2023.