

# The 18th International Conference on Computer Science & Education

(ICCSE 2023)



December 1 – 7, 2023 Xiamen University Malaysia, Selangor, Malaysia

Final Program & Proceeding Abstracts

#### ICCSE 2023 is

#### **Organized by**

Computer Education Research Association of Chinese Universities (CERA-CU)

#### Hosted by

School of Computing and Data Science and Supporting Department, Xiamen University Malaysia

#### **Publication**

The proceedings of ICCSE 2023 will be published by Communications in Computer and Information Science (CCIS) proceedings, one of Springer Nature Computer Science Book series.

Website: http://www.ieee-iccse.org

# ICCSE 2023 The 18<sup>th</sup> International Conference on Computer Science and Education

**Final Program** 

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# **Table of Contents**

Welcome to ICCSE	1
Committees	3
Program at a Glance	5
Keynote Speeches	9
DCLC Workshop	15
Invited Sessions	19
General Conference Information	25
Best Paper Award	31
Best Poster Award	32
Introduction of Presentations	33

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# Welcome to ICCSE

On behalf of the ICCSE 2023 organizing committee, I am honored and delighted to welcome you to the 18<sup>th</sup> International Conference on Computer Science and Education (ICCSE 2023). ICCSE is a series of annual conference, which began in 2006 in Xiamen, China. The Conference provides an international forum for presenting the most recent advances in the fields of Computer Science, Education, and related areas of Engineering and Advanced Technologies. Also, the conference facilitates and promotes information exchange among participants from industry, research laboratories, and academia.

The 18<sup>th</sup> International Conference on Computer Science & Education will be held in Xiamen University Malaysia, from December 1-7, 2023 in Selangor, Malaysia. The conference is organized by the Computer Education Research Association of Chinese Universities (CERA-CU) and hosted by Xiamen University Malaysia (XMUM). The proceedings of ICCSE 2023 will be published by Springer, a highly reputable publisher. Additionally, selected papers from the conference will be recommended for publication in relevant, high-quality journals. The special journal contributor session provides an invaluable opportunity for conference paper authors to engage with editors of recommended El-indexed international journals, who will share procedures and tips for journal paper submission. Topics of this year's conference will be focused on *Empowering development of high quality education with digitalization*.

ICCSE 2023 will bring together professors, experts, professionals and researchers from universities, research institutes and related industries to share new research results, ideas and new perspectives on a wide range of Computer Science and Education, especially AI, Large Scale Model, Data Science and Engineering by addressing frontier technical and business issues essential to applications of Education digital transformation, digitalization capability for individuals in both higher education and advancing people's life.

Our technical program is rich and varied with 3 keynote speeches: *Internet to China and Cybersecurity* from Professor XU Rongsheng, Institute of High Energy Physics, Chinese Academy of Sciences, China; *The Impact of Generative AI on Education* from Professor Andrew Ware in Computing of University of South Wales, UK; *Digital Transformation and Smart Education* from Professor ZHOU Aoying, East China Normal University, China.

For international participants, "Selamat datang ke Malaysia", which in our local language, Bahasa Malaysia, means welcome to Malaysia. In between your busy conference schedule, we hope you find some time to enjoy our megadiverse tropical country which is well known for its multi-ethnicity, multi-culture and multi-cuisine. In addition to marveling at Xiamen University Malaysia's vast and beautiful campus, we recommend a visit to the heart of the city to admire our skyscrapers. Nestled in the heart of the city is the Petronas Twin Towers, the tallest twin towers in the world and the Kuala Lumpur Tower which is the tallest tower in South East Asia. Closer to the conference venue is

Putrajaya, the administrative and judicial capital of Malaysia. Here, you will find marvelous architecture infused with traditional Islamic designs. If you're feeling adventurous, we highly recommend a day trip to Malacca, Malaysia's historical city.

A welcome address is not complete without a note of appreciation to the individuals who worked tirelessly to make this conference possible. We thank program chairs for their advice on organizing the conference technical program. We extend our appreciation to the publication committee for their thoroughness in processing the submitted papers. We also extend our appreciation to the conference local organizing committee which was led by the School of Computing and Data Science and supporting departments at Xiamen University Malaysia.

Dr Geetha Kanaparan General Chair, ICCSE 2023 Deputy Dean, School of Computing and Data Science Xiamen University Malaysia

# Committees

#### **Honorary Chairs**

Prof. Jonathan Li, University of Waterloo, Canada
Prof. Huiqiong Wang, Xiamen University Malaysia, Malaysia
Prof. Li Maoqing, Automation Department, Xiamen University, China

#### **General Chair**

Prof. Geetha Kanaparan, Xiamen UniversityMalaysia, MalaysiaProf. HONG Wenxing, Xiamen University, China

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#### **Industry Chairs**

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#### **Regional Chairs**

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- Dr. Min Xia, Department of Engineering, Lancaster University, UK.
- Prof. Wenxing Hong, Automation Department, Xiamen University, China

#### **Program Committees**

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Wang Qing, Tianjin University, China Wang Yang, Southwest Petroleum University, China Wang Ying, Xiamen University, China Wang Zidong, Brunel University, UK Wei Shikui, Beijing Jiaotong University, China Wen Lifang, China Machine Press / Huazhang Co., China Weng Yang, Sichuan University, China Wu Xinda, Neusoft Institute Guangdong, China Xi Bin, Xiamen University, China Xi Chunyan, Computer Education Press, China Xiangjian (Sean) He, University of Technology, Sydney (UTS), Australia Xiao Huimin, Henan University of Finance and Economics, China Xie Lihua, Nanyang Technological University, Singapore Xu Li, Fujian Normal University, China Xu Zhoubo, Guilin University of Electronic Technology, China Xue Jingfeng, Beijing Institute of Technology, China Yang Li, Hubei Second Normal College, China Yang Mei, Southwest Petroleum University, China Yu Yuanlong, Fuzhou University, China Zhang Dongdong, Tongji University, China Zhang Yunfei, VIWISTAR Technologies Ltd, Canada Zhao Huan, Hunan University, China Zheng Li, Tsinghua University, China Zhou Qifeng, Xiamen University, China Zhou Wei, Beijing Jiaotong University, China Zhu Shunzhi, Xiamen University of Technology, China

# Program at a Glance

# Conference Venue : Block A, Xiamen University Malaysia(XMUM)

December 1, 2023, Friday, Afternoon (GMT+08:00)			
Time	Program	Room	
14:00-17:00	Onsite Registration	A3-827	
December 2, 2023, Saturday (GMT+08:00)			
Time	Program	Room	
08:00-08:30	Onsite Registration		
08:30-09:00	Opening Ceremony		
09:00-09:50	Keynote Speech I Internet to China and Cybersecurity Prof. XU Rongsheng (Chinese Academy of Sciences, China)	-	
09:50-10:10	Tea Break		
10:10-11:00	Keynote Speech IIThe Impact of Generative AI onEducationProf. Andrew Ware(University of South Wales, UK)Keynote Speech III	A3-827	
11:00-11:50	Digital Transformation and Smart Education Prof. ZHOU Aoying (East China Normal University, China)		
12:00-14:00	Lunch	A3-819	
Time	Program	Room	
14:00-16:00	DCLC Workshop (Hybrid)	A3-827	
16:00-16:15	Tea Break	A3-819	
16:15-18:15	Invited Session 1: Curriculum Reform for Introduction to	A3-827	

	Computer Science combine Artificial			
	Special Session: Best Paper Candidates	A3-824		
December 3, 2023, Sunday (GMT+08:00)				
Time	Program	Room		
8:00-10:00	Invited Session 2: VR, AR, and MR Technologies in Education	A3-827		
	Parallel Discussion 1: Computer science and Data science	A3-824		
	Parallel Discussion 2: New digital technology's application (AI,ML,Large scale model)	Tencent/VooV Meeting#: 626-8961-6797		
10:00-10:15	Tea Break	A3-819		
10:15-12:15	Invited Session 3: Machine learning and its applications in social science	A3-827		
	Parallel Discussion 3: New digital technology's application (AR, VR, Metaverse etc.)	A3-824		
	Parallel Discussion 4: Online learning and MOOCs	Tencent/VooV Meeting#: 626-8961-6797		
12:15-14:00	Lunch	A3-819		
Time	Program	Room		
14:00-16:00	Parallel Discussion 5: Pedagogical strategies for education digital transformation	A3-827		
	Parallel Discussion 6: E-society	A3-824		
16:00-16:15	Tea Break	A3-819		
16:00-17:30	Online Poster Session	Tencent/VooV Meeting#: 626-8961-6797		
18:00-18:30	Best Paper Award and Closing Ceremony	Hotel		
18:00-21:00	Gala dinner (Banquet)	Hotel		

RoomA3-827#: Tencent/VooV Meeting: 367-4584-7338 RoomA3-824#: Tencent/VooV Meeting: 626-8961-6797 Duration: 2023/12/02-2023/12/03 08:00-18:00 (GMT+08:00)

December 4, 2023, Monday (GMT+08:00)				
Time	Program	Room		
Campus and lab visiting at XMUM (Academic exchange and communication)				
December 5, 2023, Tuesday				
Time	Program	Room		
	Special session:			
14:00-16:00	Mathematical Model for Biosignals and Biomedical Imaging Session chair: Prof. Hiroki Takada	A3-827		
	(University of Fukui)			
December 6, 2023, Wednesday				
Optional workshops				
December 7, 2023, Thursday				
The conference has ended.				

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# Keynote Speech I

# **Internet to China and Cybersecurity**

Professor XU Rongsheng

# Institute of High Energy Physics, Chinese Academy of Sciences, China.

#### Abstract

In 1993, the Institute of High Energy Physics at Chinese Academy of Sciences established a leased-line with 64K pbs bandwidth connected to the Stanford Linear Accelerator Center at the United States, which brought Internet to China. Followed by the WWW set up, China soon jointed the world information-era. The process of this event will be reviewed and the impact to the Chinese people would be the major contents of the talk.

Cybersecurity has also become a great concern in mainland China. The speaker has been working in research on Cybersecurity's project for 25 years, especially on the principal of Digital Forensics in China. The topics of how to investigate the cybercrime and how to cultivate cybersecurity's talents will also be covered.

#### **Speaker Biography**



Professor Xu studied in Mathematics department in Peking University, China, from 1965 to 1970. He completed his M.Sc. in Computing and Physics at the Chinese Academy of Sciences in 1982. Later on, he continue his research in the University of California, Santa Cruz, USA, where he received his Ph.D. in Experimental Particle Physics in 1987.

Prof. Xu RongSheng has made significant contributions in various fields throughout his career. From 1988 to 1992, he played a pivotal role in establishing the software platform for the BES collaboration at IHEP (Institute of High Energy Physics) and implemented data analysis for the BEPC (Beijing Electron Positron Collider). In the years 1993 to 1995, Prof. Xu achieved remarkable milestones by opening the first Internet leased line in China and establishing the country's inaugural website. His commitment to academic excellence continued from 1996 to 2000, where he served as the supervisor of Ph.D. and Master's students, initiating research in the field of

cybersecurity. From 2000 to 2016, Prof. Xu delved into the study of Digital Forensics Science and emerged as a key figure in the foundation of the China Competition on Digital Forensics.

In recognition of his outstanding contributions, Prof. Xu has received several prestigious awards. In 1993, he was honored with the Hu Gangfu Prize for Experimental High Energy Physics by the Chinese Physics Society. In 1996, he received the Progress Prize for IHEP's first Internet Connectivity to the USA from the Chinese Academy of Sciences. Prof. Xu was further acknowledged with the first prize of Progress on Science and Technology by the Chinese Academy of Sciences in 1999. In 2001, he was awarded the second prize of Progress on Science and Technology by the State Council of the People's Republic of China.

# Keynote Speech II

# The Impact of Generative AI on Education

# Professor Andrew Ware

# Computing, University of South Wales, UK.

#### Abstract

Generative Artificial Intelligence (AI) has significantly reshaped the educational sector. This talk delves into its influence, examining the opportunities, challenges, and ethical considerations. Generative AI, using machine learning techniques like natural language processing, has transformed content creation, personalization, and learning experiences. It enables tailored educational materials, automates administrative tasks, and facilitates adaptive learning environments.

This discussion explores the benefits of Generative AI in education: personalized learning experiences, innovative tools for educators, and inclusivity in learning. However, ethical dilemmas—data privacy, biases, and balancing AI and human involvement—are critical.

The talk also considers the future implications of Generative AI in education, discussing its potential to bridge educational gaps and revolutionize the roles of educators and students. The aim is to highlight the transformational impact of Generative AI in education, emphasizing ethical considerations for a more efficient and inclusive educational landscape.

#### **Speaker Biography**



Andrew Ware is a Professor of Computing at the University of South Wales. His research interest centre on deploying intelligent computer systems (Artificial Intelligence and Data Science oriented solutions) to help solve real-world problems. Andrew is currently working on AI-related projects with several industrial and commercial partners, including Tata Steel and Respiratory Innovation Wales. Andrew is Director of Research for the Wales Institute of Digital Information, a collaboration between the University of South Wales, the University of Wales Trinity Saint David, and Digital Health and Care Wales (DHCW).

Professor Ware teaches various computer-related courses, including artificial intelligence, data mining and computer programming. Moreover, Andrew has successfully supervised nearly forty PhD students and has been an active participant in many international research projects. Andrew is a Regional Director of Techno Camps, an innovative and ambitious imitative funded by the Welsh Government that seeks to engage young people with computing and its cognate subjects. Andrew is Director of 360 Ability Sport, a charitable company that aims to increase the participation of people with disabilities engaging in sport. Andrew is Specialist Advisor for Digital and Technology to Respiratory Innovation Wales.

Andrew is Editor in Chief of the international journal Annals of Emerging Technologies in Computing (AETiC).

Details can be found at *https://staffdirectory.southwales.ac.uk/users/andrew.ware.html#aboutme* 

# Keynote Speech III

# **Digital Transformation and Smart Education**

**Professor ZHOU Aoying** 

East China Normal University, China.

#### Abstract

Digital transformation which we are currently experiencing is in fact a holistic deep revolution. Digitalization is an effective measure to conduct the revolution, and the technological condition for carrying out the revolution. Internet lays the foundation for digital transformation, and the COVID-19 pandemic is a powerful propeller for the digital transformation. In essence, data is the driving force for digital transformation, just like electricity plays the role in electrification. Data is the third most important power after steam power and electric power in the history of human civilization, and it should be called data power. Data is actually the representation in the computer world of human perception about the objective world, and data is essentially the bridge and media which make things interconnected. Digitalization is actually making everything represented in data and then using artificial intelligence algorithm to interpret the data, and it could be regarded as informatization augmented with Internet thinking and data thinking. The fundamental way for education Informatization is to keep up with and learn from the Internet company. Nowadays, the digital transformation of education is imperative and urgent, but the technical bringism could not solve the problems in education we are facing. Developing education technology (EduTech) is the only road we must get through.

#### **Speaker Biography**



ZHOU Aoying, Vice president of East China Normal University (ECNU), Director of AI+ Institute at ECNU, Professor at School of Data Science and Engineering (DaSE). He was the winner of the National Science Fund for Distinguished Young Scholars supported by National Natural Science Foundation of China (NSFC) and the professorship appointment under Changjiang Scholars Program of Ministry of Education. He is a CCF Fellow, the Vice President of Shanghai Computer Society, and the Associate Editor-in-Chief of Chinese Journal of Computer. His research interests include database, data management, digital transformation, and data-driven applications such as Financial Technology (FinTech), Education Technology (EduTech), and

Logistics Technology (LogTech).

# DCLC Workshop

The Digitalization Capability Level Certificate (DCLC) is developed and hosted by Computer Education Research Association of Chinese Universities (CERA-CU), a professional association in computer education fields all over the country. This assessment system is designed for individuals, evaluating their digital literacy and skills, and for organizations, assessing the overall capability of digital transformation. The upcoming workshop will focus on the themes such as talent-oriented digital capability assessment and digital talent development. Researchers in attendance will engage in discussions about the relevant aspects of cultivating and assessing digital capabilities in talent, as well as potential collaborative research projects in the integration of industry and education. More details please refer to the official website of DCLC: <a href="http://dclc.org.cn/">http://dclc.org.cn/</a>.

# **Workshop Speakers**

- Prof.LI Maoqing, Xiamen University, Vice President of the Computer Education Research Association of Chinese Universities (CERA-CU), Director of DCLC Expert Committee, China.
- Prof. CHEN Wuyuan, The Belt and Road Research Institute, Xiamen University, China.
- Prof. XIONG Yu, School of Automation, Chongqing University of Posts and Telecommunications, China.
- Prof. WANG Ning, the General Education Center, Xiamen Huaxia University, China.
- Assoc. Prof. TENG Chong, School of Cyber Science and Engineering , Wuhan University, China.
- (Chair) Prof.HONG Wenxing, Xiamen University, China.

# Invited Speech I

# Effective Strategies for Talent Development Reform in Chinese Universities under the Background of Artificial Intelligence

#### Prof. CHEN Wuyuan

The Belt and Road Research Institute, Xiamen University, China

### **Speaker Biography**



CHEN Wuyuan, professor of Institute of Education, Executive Dean of the Belt and Road Research Institute, Xiamen University. Served as the Director of the Social Science Research Office of Xiamen University, Director and Deputy Editor in Chief of the Editorial Department of the Journal of Xiamen University (Philosophy and Social Science Edition). His main research directions are comparative higher education, private higher education, education economics and management, etc. He hosted over 10 national and provincial level projects; Two monographs have been published as well as three translated works. He published over 100 papers in important academic journals both domestically and internationally, such as Education Research, Higher Education Research, Collected Works of Universities (Japan), and Research on University Financial Management (Japan). He received one second prize of the National Education Science Research Excellent Achievement Award issued by the Ministry of Education, and three second prizes and two third prizes of the Social

Science Excellent Achievement Award issued by the People's Government of Fujian Province.

# **Invited Speech II**

#### Big data and big model boosting the reform of intelligent education evaluation

Prof. XIONG Yu

School of Automation, Chongqing University of Posts and Telecommunications, China.

#### **Speaker Biography**



XIONG Yu is now the professor and doctoral supervisor at Chongqing University of Posts and Telecommunications (CQUPT), and the director of Research Center for Artificial Intelligence and Smart Education at CQUPT. He also serves as the Vice Chairman of Technical Committee on Intelligent Education of the Chinese Association of Automation, the Secretary General of Chongqing Higher Education Steering Committee for Teaching Informatization and Teaching Innovation, and the Senior Member of China Computer Federation. Besides, he have taken more than 20 research projects of provincial and ministerial level, including the National Natural Science Foundation of China, Chongqing Special Key Project for Technology Innovation and Application Development, Chongqing Key Research Project for Higher Education Teaching Reform, etc. He has published more than

60 academic papers and was awarded 3 the first prize of Provincial and Ministerial-Level Science and Technology Awards. His research interests include artificial intelligence and smart education, pattern recognition and machine learning, and educational data mining.

# **Other Speakers**

#### **Exploration and Practice of Digital Literacy Education for College Students**

Prof. WANG Ning, the General Education Center, Xiamen Huaxia University, China.

#### **Speaker Biography**



Wang Ning is a Professor and Senior Engineer at Xiamen Huaxia University, China, and a visiting scholar at Florida University, USA. His current titles include Assistant to the Xiamen Huaxia University President, Director of the General Education Center and Data Science/Big Data Technology programs, and leader of the E-Commerce major in the university.

Prof. Wang is honored as a Director of the Fujian Engineering Research Center for Information and Communication Technologies, as well as the leader of a provincial research center for Smart Education. He holds numerous provincial and national recognition, serving in academic organizations like the Computer Education Research Association and China Computer Federation (CCF).

A key focus of Prof. Wang's work lies in digital literacy education for college

students. He led the development of group standards for "Digital Literacy and Skills Certification", along with its instructional textbooks, and pilot certification programs for digital competencies and skills. His pioneering research and hands-on experience in the field of digital literacy talent cultivation is highly recognized.

# Exploration and Practice of Promoting High-Quality Development of Higher Education with Digitization

TENG Chong, School of Cyber Science and Engineering, Wuhan University, China.

#### **Speaker Biography**



TENG Chong Associate Professor at School of Cyber Science and Engineering, Wuhan University, and supervisor for graduate students. She holds a Ph.D. in Computer Software and Theory, specializes in research areas including Information Literacy education, Big Data and Artificial Intelligence, Natural Language Processing, and Sentiment Analysis.

She has led and participated in 14 natural science research projects and 3 social science research projects. In recent years, she has published over 30 high-level academic papers and obtained two granted invention patents.

# **Invited Sessions**

# *Topic 1: Curriculum Reform for Introduction to Computer Science Combine Artificial Intelligence*

#### **Chairs:**

#### Session Chair

Prof. LUO Juan, Hunan University (juanluo@hnu.edu.cn)

#### Co-chair

Prof. ZHAO Huan, Hunan University (hzhao@hnu.edu.cn)

Prof. CAI YuHui, Hunan University (rj\_cyh@hnu.edu.cn)

#### Abstract

Information technology and artificial intelligence technology have been more and more integrated with various disciplines including literature, social science and engineering. How to provide corresponding course content and tools for the Introduction to Computer Science and Introduction to Artificial Intelligence to adapt to this change is an urgent problem in the field of computer education question. The purpose of this session is to provide a forum to exchange experience and achievements in curriculum construction and reform.

Topics include but are not limited to:

- Exploration and practice of the teaching system construction of Introductory Computer Science oriented to the integration of disciplines;
- Exploration and practice of the teaching system construction of the Introduction to Artificial Intelligence oriented towards the integration of disciplines;
- Reform of teaching methods, tools and models;
- Evaluation of student learning outcomes.

#### **Short Bio of Chairs**



Prof. LUO Juan is a Professor and Ph.D. supervisor, currently serving as the Vice Dean of the College of Computer Science and Electronic Engineering, Hunan University, China. She holds a bachelor's degree from the National University of Defense Technology, China and obtained her master's and Ph.D. degrees from Wuhan University, China. Previously, she worked at Fiberhome Networks, Wuhan Academy of Posts and Technology, and has also served as a visiting scholar at the University of California, Irvine, USA. Prof. LUO has been recognized as a New Century Outstanding Talent by the Ministry of Education (China) and has received accolades such as the Hunan Province Outstanding Youth Fund and recognition as a young backbone teacher in Hunan Province.

Her current research interests include IoT, cloud computing and artificial intelligence.

Details of Prof. LUO's experiences can be found at: http://csee.hnu.edu.cn/people/luojuan



Prof. ZHAO Huan is a Professor, Ph.D. supervisor doctor supervisor, associate dean of College of Computer science and Electronic Engineering. She is visiting scholar at the University of California, San Diego, the member of the Computer Basic Teaching Steering Committee of the Ministry of Education, and the member of the Steering Committee of the Education and Training of Industrial and Information Talents. She won the second prize of National Education Achievement Award, the Outstanding prize of BAOGANG distinction teacher and Education and Teaching Award of Huo Yingdong Education Foundation. Her research interests include natural language processing and speech information processing.

Details of Prof. ZHAO's experiences can be found at: http://csee.hnu.edu.cn/people/zhaohuan



Prof. CAI Yuhui is a faculty member at the School of Information Science and Engineering at Hunan University, holding the position of Associate Professor. He teaches courses such as Introduction to Computing and Artificial Intelligence and 3D Graphics Programming. He has led one key project funded by the Ministry of Education, one provincial educational reform project, and two collaborative education projects between academia and industry funded by the Ministry of Education. Additionally, he has overseen multiple research and development projects with various enterprises. He has been awarded a second-class prize in the Chinese University Scientific and Technological Awards and has translated and published one textbook in the "Foreign Classic Textbook

Series." He has also guided students in participating in national-level programming competitions, where they have won gold medals. He has received the title of Excellent Guiding Teacher for Innovation and Entrepreneurship at Hunan University on multiple occasions."

His current research interests include computer networks, image processing, artificial intelligence, software engineering.

Details of Prof. CAI's experiences can be found at: http://csee.hnu.edu.cn/people/caiyuhui

## Topic 2: VR, AR, and MR Technologies in Education

#### Chair:

#### Session chair

Carsten Lecon, Aalen University (Germany)

### Abstract

Virtual 3D Learning Environments are not only used for the visualization of complex learning matters, but get increasing importance in learning environments (currently, accelerated by the Corona pandemic). Students for example act as avatars in artificially generated worlds, in which they learn, develop, and present simultaneously. Full immersion is possible by so called head mounted displays. Nowadays, these are less expensive, so that many users can use this technique. Furthermore, Augmented Reality (AR) und Mixed Reality (MR) applications become more and more important in industrial application – and also in learning environments.

Topics are included but not limited to:

- Virtual 3D Environments for collaborative learning
- Conversational Agents in virtual environments
- AR and VR Learning Settings for Higher Education and School Education
- Teaching VR/ AR/ MR techniques in Higher Education
- Didactic and pedagogical aspects when designing VR/ AR/ MR applications
- Evaluation of AR/ VR / MR applications
- Kinetosis in VR environments

#### Short Bio of Chair



### Prof. Dr. Carsten Lecon

- Study of computer science
- (Technical University Braunschweig, Germany)
- Software Quality Assurance
- (Siemens AG, Braunschweig)
- Database systems, Media archives
- (Medical University Luebeck, Germany)
- Virtual University of Applied Sciences
- (FH Luebeck, Germany)
- Since 04/2004 Professor for media computer science
- (Aalen University for Applied Sciences, Germany)
  - Teaching: Foundations of digital media, VR/AR technologies, audiovisual media, game programming, immersive e-learning
  - Research: E-/VR-Learning, kinetosis in VR environment, live motion capture; artificial intelligence for e-mobilty (time series forecast)

### Topic 3: Machine Learning and its Applications in Social Science

**Chair:** 

**Session Chair** 

WENG Yang, Sichuan University, wengyang@scu.edu.cn

#### Abstract

Social scientists find themselves in an era of abundant data, increasingly turning to machine learning tools to extract valuable insights from datasets of varying sizes. This session aims to elucidate how the integration of machine learning into the realm of social sciences necessitates a reevaluation of not only the application of machine learning methods but also the adoption of best practices within the field. Diverging from the conventional applications of machine learning in computer science and statistics, its utilization in social scientific endeavors involves the exploration of new concepts, quantification of their prevalence, evaluation of causal relationships, and the formulation of predictive models. The wealth of data and available resources facilitates a departure from the deductive approach traditionally employed in social sciences, ushering in a more sequential, interactive, and ultimately inductive approach to the process of inference.

#### Short Bio of Chair



Prof. WENG Yang received his B.S. and Ph.D. degrees from the Department of Mathematics, Sichuan University. Since 2006, he has been with the College of Mathematics, Sichuan University, where he is currently an Associate Professor. He was a Postdoctoral Fellow with the Nanyang Technological University, Singapore, from August 2008 to July 2010. His current research interests include statistic machine learning and nonparametric Bayesian inference.

### Special Session: Mathematical Model for Biosignals and Biomedical Imaging

## Chair:

# Hiroki TAKADA, University of Fukui, Japan. takada@u-fukui.ac.jp

### Abstract

In today's world, academically examining the safety of viewing them is necessary where digital images and videos are flooding our homes. In this section, the new development of the biosignals and the biomedical Imaging are introduced and utilized in this field. Mathematical models including the artificial intelligence have been regarded as fundamental technique for the bio-signal. In connection with 5G/beyond 5G technology and networks, the biosignals and their utilization have been attracting attention. The application of the AI, which has made remarkable progress in recent years, to this field will also be discussed.

This invited session will collect papers of the following subjects, but not limited to:

- Machine Learning/AI
- Biomedical Imaging
- Computer–Human Interact
- Control and Communication
- Deep Learning
- Mechatronics and Robotics
- Visualization of Big Data
- Techniques, Models, and Algorithms

### **Short Bio of Chairs**



Prof. Hiroki TAKADA, is a tenured Professor in the Department of Human and Artificial Intelligent Systems, the Graduate School of Engineering, University of Fukui, Japan. He is also the Co-Director of the Nonlinear Science Lab. His research is centered on the nonlinear analysis of time sequences. In his research, mathematical models have been obtained from the data sequences in Economics, Meteorology, and Erectrophysiology based on the stochastic process theory. He also received the Organization Contribution Award from the International Conference of Computer Science and Education (ICCSE) in 2020. Prof. Takada also serves as an

editor in Environmental Health and Preventive Medicine and an editor-in-chief of Forma. He is a member of IEEE, Physical Society of Japan, and other organizations.

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# **General Conference Information**

### Language

The official language of the conference is English.

## **Conference Venue**

## • Xiamen University Malaysia (XMUM)

Xiamen University Malaysia (XMUM)is the first overseas campus set up by a renowned Chinese university and the first Chinese university branch campus in Malaysia. Located in the vicinity of Bandar Kota Warisan, Sepang, Selangor, it's just 15 minutes ride from the country's administrative center of Putrajaya or 45 km southwest of Kuala Lumpur. It is built on an area of 150 acres with a planned total floor space of 470,000 square meters. XMUM aspires to become a



university with a distinct global outlook, which features first-class teaching and research, and embraces cultural diversity. With the exception of Chinese Studies and Traditional Chinese Medicine, the medium of instruction for all other programme is English.

### Website: www.xmu.edu.my

### Address:

Jalan Sunsuria, Bandar Sunsuria, 43900 Sepang,

Selangor Darul Ehsan, Malaysia

Tel: +03 7610 2079

### **Conference Hotel**

### • Holiday Inn Sepang Airport, an IHG Hotel

Address: Jalan Warisan Sentral 2, KIP Sentral, 43900 Sepang, Selangor, Malaysia

Tel: +60 1-800-88-8118



# Transportation

Date	Time	Direction
Saturday, 2 <sup>nd</sup> December 2023	7:30am	Holiday Inn Sepang to Xiamen University Malaysia
Saturday, 2 <sup>nd</sup> December 2023	6:30pm	Xiamen University Malaysia to Holiday Inn Sepang
Sunday, 3 <sup>rd</sup> December 2023	7:30am	Holiday Inn Sepang to Xiamen University Malaysia
Sunday, 3 <sup>rd</sup> December 2023	5:30pm	Xiamen University Malaysia to Holiday Inn Sepang

Transportation to and from the conference venue is provided as follows:

# Wifi

When in Xiamen University Malaysia, kindly scan the following QR code for free wifi access:

Student-5G



#### **Access to Conference Venue**

• Using e-Hailing Service, such as Grab



Step 3: From the security guard - Second Entrance walk 3 Minutes toward A3 building



• Kuala Lumpur International Airport to Xiamen University Malaysia Campus



# **About Selangor Darul Ehsan**



"Selangor /sə'læŋə/ also known by its Arabic honorific, Darul Ehsan, or 'Abode of Sincerity' is one of the 13 states of Malaysia. It is on the west coast of Peninsular Malaysia and is bordered by Perak to the north, Pahang to the east, Negeri Sembilan to the south and the Strait of Malacca to the west. It surrounds the federal territories of Kuala Lumpur and Putrajaya, both of which were

once under Selangor's territorial sovereignty. The state capital is Shah Alam, however the first city in Selangor, and the royal capital is Klang. Another major urban centre is Petaling Jaya which was awarded city status on 20 June 2006. Selangor is one of only two Malaysian states with more than one city; the other is Sarawak. Selangor has the largest city in Malaysia and it is growing rapidly due to modernisation in the Klang Valley. The state of Selangor has the largest economy in Malaysia in terms of gross domestic product (GDP) with RM 128.815 billion (roughly USD 42 billion) in 2010 making up 23% of the total GDP of Malaysia. This state is also the most developed in Malaysia with good infrastructure such as highways and transport. The state also has the largest population in Malaysia, with a high standard of living and the state's poverty rate is the lowest in the country.

(from: http://dbpedia.org/resource/Selangor)

# **Conference Hotel Recommendation**

### • Holiday Inn Sepang Airport, an IHG Hotel

Address: Jalan Warisan Sentral 2, KIP Sentral, 43900 Sepang, Selangor, Malaysia Tel: +60 1-800-88-8118

# **Booking the hotel**



#### SCAN BELOW QRCODE TO BOOK ROOM AT HOLIDAY INN, SEPANG MALAYSIA



Booking Link

For any inquiries regarding the booking confirmation, please contact :

Ms. Teeveya Rajan

Email: Teevyaa.Rajan@ihg.com.

# **Best Paper Award**

We will select 6 Best Paper Awards in the International Conference on Computer Science and Education annually. How is the Best paper selected? The figure below illustrates the process of Best Paper Award evaluation.



The processing of Best Paper selection

# **Best Poster Award**

We will select 2 Best Poster Awards in the International Conference on Computer Science and Education annually. How is the Best Poster selected? The figure below illustrates the process of Best Poster Award evaluation.



The processing of Best Poster selection

# **Introduction of Presentations**

#### (Oral & Poster)

ICCSE aims to provide an open and effective platform to exchange the ideas for CS and Education field. Generally, all accepted papers should be presented in one of the two methods: a. Oral Presentation, b. Poster Presentation.

#### **Oral Presentation:**

1. Session Number:

Invited Sessions: Invited session1-3; Parallel discussion: Parallel Session 1-6.

- 2. Oral Presentation Time: 15 minutes, including discussion. (Please check your schedule in technical program)
- 3. Each speaker is required to meet his/her session chairs in the corresponding session rooms 10 minutes before the session starts and copy the PPT/PDF file to the computer.
- 4. Each session room is equipped with a projector and a laptop (with Microsoft Windows, Microsoft Power-Point, and PDF reader). Please make sure that your files are compatible and readable with our operation system by using commonly used fonts and symbols.
- 5. The conference will be held both onsite and online. If the authors cannot attend the conference onsite, they can prepare a 15-min video and display online or make the presentation online. The online session will be held via Tencent Meeting (in China )or VooV (outside of China).

#### **Online Poster Presentation:**

- All the author of online poster session should make a poster following the instruction of Poster Orientation and Size.
- 7. All the posters should be sent to iccse.2023@gmail.com with title "[paper id] + [authors' names]+[short paper title] before Nov. 25, 2023.
- 8. All the poster session author should enter online poster session on time and answer the questions about the poster.

#### **Poster Orientation and Size**

A typical academic poster should have a two, three or four-column layout, with variations.

• Poster in landscape format

include a header with three or four columns depend on the demands.

• Poster in portrait format

Include a header with two columns.

#### Poster should be submitted by instructions below:

- Pdf document with the name: Paper ID + paper title. pdf
- The pdf document size will no more than 5M
- Send poster to: iccse.2023@gmail.com
- Deadline: Nov. 25, 2023

#### Examples



Fig.1 Portrait format

Fig.2 Landscape format



The 18th International Conference on Computer Science and Education December 1-7, 2023 Selangor, Malaysia





XIAMEN UNIVERSITY MALAYSIA **厦門大**學馬來西亞分校