CONFERENCE PROGRAM

ICSIM

2024 The 7th International Conference on Software Engineering and Information Management

Workshop: ICBDSC 2024

2024 the 7th International Conference on Big Data and Smart Computing

Fiji (virtual) | January 23-25, 2024

Supported by

The University of Fiji

THE UNIVERSITY OF SYDNEY

MASSEY UNIVERSITY
UNIVERSITY OF NEW ZEALAND

THE UNIVERSITY OF NEWCASTLE
AUSTRALIA

UNIVERSITAS INDONESIA

Published by

ICPS
Published by ACM

TABLE OF CONTENTS

Agenda Overview

***All schedules will process in Beijing Time (GMT+8)**

Zoom ID: 838 6551 7061
Link:
https://us02web.zoom.us/j/83865517061?pwd=Q1JsNGRRaS81N2NuajVoa0RGWHU1QT09
Password: ICSIM

Day 1- January 23, 2024 | Tuesday	
Beijing Time	**Event**
17:00-18:10	Committee Member & Speakers Test
10:00-16:30	Author Test
Day 2- January 24, 2024 | Wednesday	
Beijing Time	**Event**
15:00-18:15	Opening Ceremony & Guest Speeches
18:40-21:10	Session 1
Day 3- January 25, 2024 | Thursday	
Beijing Time	**Event**
9:30-11:45	Session 2
14:00-16:45	Session 3

Welcome

Dear distinguished delegates,

Welcome to 2024 The 7th International Conference on Software Engineering and Information Management (ICSIM 2024), which will be held in Fiji (Online) on January 23-25, 2024. Based on all the participants' willingness, the conference committee finally decide to hold the conference online. We appreciate your support and understanding.

ICSIM initiated in Casablanca, Morocco in 2018, and then held in Bali, Indonesia in 2019, Sydney, Australia in 2020, Yokohama, Japan virtually in 2021-2022 due to the impact of covid19, and Palmerston North, New Zealand in 2023. The conference is addressed to academics, researchers and professionals with a particular interest related to the conference topic. It brings together academics, researchers and professionals in the field of Software Engineering and Information Management making the conference a perfect platform to share experience, foster collaborations across industry and academia, and evaluate emerging technologies across the globe. We hope that the conference results in significant contributions to the knowledge base in these scientific fields.

A word of special welcome is given to our keynote and invited speakers who are pleased to make contributions to our conference and share their new research ideas with us. Additionally, our special thanks go to our Advisory Chair, Conference Chair, Program Chairs, and all the other committee members for their excellent work in securing a substantial input of papers from all over the world and in encouraging participation.

We believe that through this conference, you can get more opportunities for further communication with researchers and practitioners with common interests in this field. With the strong support from all of you, ICSIM conference is more distinctive. We wish that all guests can gain benefits from this conference and improve their academic performance. Thank each of you for your efforts to make this conference successful.

We wish all of you will have an unforgettable experience in the conference and hope we could meet face to face next year!

Yours sincerely,
Conference Committee

Committee

Conference Chairs
Yonghui Li, The University of Sydney, Australia
Hiroaki Nishi, Keio University, Japan
Paul Pang, Federation University Australia, Australia

Program Chairs
Huiyu Zhou, University of Leicester, UK
Chuan-Ming Liu, National Taipei University of Technology, Taiwan
Prabhat K. Mahanti, University of New Brunswick, Canada
Suhuai Luo, University of Newcastle Australia, Australia
Shawkat Ali, The University of Fiji, Fiji

Program Committee
MGM Khan, The University of The South Pacific, Fiji
Kaylash Chaudhary, The University of The South Pacific, Fiji
Anal Kumar, Fiji National University, Fiji

Local Chairs
Kunal Kumar, The University of Fiji, Fiji
Neeraj Sharma, The University of Fiji, Fiji

Publicity Chairs
Rusli bin Haji Abdullah, Universiti Putra Malaysia, Malaysia
Paniti Netinant, Rangsit University,Thailand

Regional Chairs
Angela Lee, Sunway University,Malaysia
Razali Yaakob, Universiti Putra Malaysia, Malaysia
Betty Purwandari, Universitas Indonesia, Indonesia
Omar Hujran, United Arab Emirates University, United Arab Emirates

Online Guidelines

Before the Conference

◆ **Time Zone** **Beijing Time (GMT+8)**

◆ **Platform: ZOOM**

* You can download Zoom Platform from the link below:

- https://zoom.us/download
- https://zoom.com.cn/download (Chinese authors' option)
- **Zoom ID: 838 6551 7061**
  Link:
  https://us02web.zoom.us/j/83865517061?pwd=Q1JsNGRRaS81N2NuajVoa0RGWHU1QT09
  Password: ICSIM

◆ **Equipment and Environment Needed**

*A computer with internet connection and camera *Headphones
*Proper lighting and background *A quiet place

◆ **Test Your Presentation**

Date: January 23, 2024

Prior to the formal meeting, presenters shall join the test room to ensure everything is on the right track. Every presenter or listener enter the ZOOM, please rename as **Session Number + Paper ID + Your Name.**

*For example: Presenter: S1+CM1-1880+ David | Listener: L001+David

During the Conference

◆ **Voice Control Rules**

*The host will mute all participants while entering the meeting.
*Speakers can unmute microphone when it is turn for his or her presentation.
*Q&A goes after each speaker, the participant can raise questions.

◆ **Oral Presentation**

*Timing: a maximum of 15 minutes in total, including 2-3 minutes for Q&A.
*Please join the meeting room 10 minutes in advance.
***We encourage all presenters to make live oral presentations. For technical problems such as network instability, we suggest you email a record video/slide to conference secretary as backup before on January 15, 2024.**

◆ Conference Recording

*We will not record the whole conference, but will screenshot for each presenter as conference participation proof. If you need a record of your presentation, please tell the staff in advance.

Detailed Agenda

***All schedules will process in Beijing Time (GMT+8)**

zoom

January 23, 2024 | Tuesday	Day 1

Committee & Speakers' Test

Zoom ID: 838 6551 7061
Password: ICSIM

Beijing Time	Speaker's Local Time	Speaker
17:00-17:10	18:00-18:10	Prof. Hiroaki Nishi
17:10-17:20	20:10-20:20	Prof. Yonghui Li
17:30-17:40	9:30-9:40	Prof. Paulo Batista
17:40-17:50	9:40-9:50	Prof. Gyu Myoung Lee
17:50-18:00	17:50-18:00	Prof. Amir Akramin bin Shafie
18:00-18:10	21:00-21:10	Assoc. Prof. Paul Pang

Session Chair & Authors' Test

Zoom ID: 838 6551 7061
Password: ICSIM

Beijing Time	Presenters
10:00-12:00	Session 1: CM1-011, CM2-006, CM1-015, CM1-014, CM1-1012, CM1-053, CM1-076, CM2-009, CM1-092-A, CM2-018
	Session 2: CM1-1015, CM1-023, CM1-005, CM1-1021, CM1-050, CM1-066, CM1-1026, CM1-037, CM1-040
	Session 3: CM2-012, CM1-034, CM1-1007, CM1-035, CM1-089, CM1-095, CM1-1010, CM1-1032, CM1-1001, CM1-070, CM1-1005
16:00-16:30	For some authors who face big time difference between Beijing time and your local time, you can test at this time.

***All schedules will process in Beijing Time (GMT+8)**

zoom

January 24, 2024 | Wednesday **Day 2**

Conference Opening & Keynote/Invited Speeches

Chaired by: Assoc. Prof. Paul Pang, Federation University Australia, Australia

Zoom ID: 838 6551 7061
Password: ICSIM

Beijing Time	Speaker's Local Time	Speaker
15:00-15:10	16:00-16:10	**Opening Remarks** **Prof. Hiroaki Nishi, Keio University, Japan**
15:10-15:50	18:10-18:50	**Keynote Speaker** **Prof. Yonghui Li, the University of Sydney, Australia, IEEE FELLOW** *Speech title: Beyond 5G towards a Super-connected World*
15:50-16:30	16:50-17:30	**Keynote Speaker** **Prof. Hiroaki Nishi, Keio University, Japan** *Speech title: The Future of Software Engineering and Information Management*
16:30-17:00	Break and Group Photo	
17:00-17:25	9:00-9:25	**Invited Speaker** **Prof. Paulo Batista, University of Évora, Portugal** *Speech title: The information management: from Couture and Rousseau to the Records Continuum Model*
17:25-17:50	9:25-9:50	**Invited Speaker** **Prof. Gyu Myoung Lee, Liverpool John Moores University, UK**
17:50-18:15	17:50-18:15	**Invited Speaker** **Prof. Amir Akramin bin Shafie, International Islamic University Malaysia (IIUM), Malaysia** *Speech title: Exploring Neural Network Control for Robot Manipulator*

***All schedules will process in Beijing Time (GMT+8)**

January 24, 2024 | Wednesday — Day 2

Session 1

Zoom ID: 838 6551 7061
Password: ICSIM

Beijing Time	Topic & Presenters
18:40-21:10	Session 1: Data privacy and security protection CM1-011, CM2-006, CM1-015, CM1-014, CM1-1012, CM1-053, CM1-076, CM2-009, CM1-092-A, CM2-018

January 25, 2024 | Thursday — Day 3

Session 2

Zoom ID: 838 6551 7061
Password: ICSIM

Beijing Time	Topic & Presenters
9:30-11:45	Session 2: Service based application design and system evaluation CM1-1015, CM1-023, CM1-005, CM1-1021, CM1-050, CM1-066, CM1-1026, CM1-037, CM1-040

Session 3

Zoom ID: 838 6551 7061
Password: ICSIM

Beijing Time	Topic & Presenters
14:00-16:45	Session 3: Visualization and Virtual Technology in Image Processing CM2-012, CM1-034, CM1-1007, CM1-035, CM1-089, CM1-095, CM1-1010, CM1-1032, CM1-1001, CM1-070, CM1-1005

Guest Speaker

Prof. Yonghui Li

The University of Sydney, Australia; IEEE FELLOW

15:10-15:50 on January 24, 2024
(**Speaker's Local Time: 18:10-18:50 on January 24, 2024**)

Zoom ID: 838 6551 7061 | Password: ICSIM

Biography

Yonghui Li received his PhD degree in November 2002. Since 2003, he has been with the Centre of Excellence in Telecommunications, the University of Sydney, Australia. Li is now a Professor and Director of Wireless Engineering Laboratory in School of Electrical and Information Engineering, University of Sydney. He is the recipient of theAustralian Research Council (ARC)Queen Elizabeth II Fellowship in 2008 and ARC Future Fellowship in 2012. He is an IEEE Fellow for contributions to cooperative communications technologies. His current research interests are in the area of wireless communications, with a particular focus on IoT, machine to machine communicaitons, MIMO, millimeter wave communications, channel coding techniques, game theory, machine learning and signal processing. Li holds a number of patents granted and pending in these fields. Professor Li is an editor for IEEE transactions on communications, IEEE transactions on vehicular technology and guest editors for several special issues of IEEE journals, such as IEEE JSAC, IEEE IoT Journals, IEEE TII, IEEE Communications Magazine. He currently serves as the Specialty Chief Editor, Frontiers Signal Processing Journal. He received the best paper awards from IEEE International Conference on Communications (ICC) 2014, IEEE PIMRC 2017, and IEEE Wireless Days Conferences (WD) 2014.

Speech Title

Beyond 5G towards a Super-connected World

Speech Abstract

Connected smart objects, platforms and environments have been identified as the next big technology development, enabling significant society changes and economic growth. The entire physical world will be connected to the Internet, referred to as Internet of Things (IoT). The intelligent IoT network for automatic interaction and processing between objects and environments will become an inherent part of areas such as electricity, transportation, industrial control, utilities management, healthcare, water resources management and mining. Wireless networks are one of the key enabling technologies of the IoT. They are likely to be universally used for last mile connectivity due to their flexibility, scalability and cost effectiveness. The attributes and traffic models of IoT networks are essentially different from those of conventional communication systems, which are designed to transmit voice, data and multimedia. IoT access networks face many unique challenges that cannot be addressed by existing network protocols; these include support for a truly massive number of devices, the transmission of huge volumes of

data burst in large-scale networks over limited bandwidth, and the ability to accommodate diverse traffic patterns and quality of service (QoS) requirements. Some IoT applications have much stringent latency and reliability requirements which cannot be accommodated by existing wireless networks. Addressing these challenges requires the development of new wireless access technologies, underlying network protocols, signal processing techniques and security protocols. In this talk, I will present the IoT network development, architecture, key challenges, requirements, potential solutions and recent research progress in this area, particularly in 5G and beyond 5G

Guest Speaker

Prof. Hiroaki Nishi
Keio University, Japan

15:50-16:30 on January 24, 2024
(**Speaker's Local Time: 16:50-17:30 on January 24, 2024**)
Zoom ID: 838 6551 7061 | Password: ICSIM

Biography

Hiroaki Nishi is a Professor of Keio University since 2014. He was a member of IEEE-SA Smart Grid Vision Project, IEEE802.3, IEEE2030, and IEEE P1394. Currently, he is a member of IEEE P1451.0, IEEE P2668, and IEEE P2805.x. He is the chair of the IEEE P1451-1-6 and IEEE P2992 Working Group. He was also a member of ITU-T Focus Group on Smart Sustainable Cities WG2. These standardization activities are achieved through his experience of various smart city projects, such as the smart energy working group chief of Nagasaki EV&ITS project, the chair of the Smart Community Implementation Committee of Kawasaki Musashikosugi Area, the chair of the Smart City Exploratory Committee of Nasushiobara, the chair of the Smart Community Implementation Committee of Saitama Urawamisono Area, and a president of Omotenashi ICT Association. He is a sub-chief editor of Smart Grid News Letter of Impress Co. Ltd, and he published several books about the standards and conducted smart city demonstrations. Since 2015, he has been a director of Edge Computing Association, Japan. He is a director of Urban Technology Alliance. He is now deputy program director of Intelligent Knowledge Processing Infrastructure Integrating Physical and Virtual Domains, Cross-ministerial Strategic Innovation Promotion Program (SIP). The main theme of his current research is to build the total network system, including the development of hardware and software architecture. In particular, service-oriented routers and smart grid/community are the centers of his research topics of demonstrations. He places importance on considering what is required for the highly networked information society in the future from the viewpoint of these applications. He researches the next-generation IP router architecture, edge computing infrastructure, data anonymization infrastructure, and effective network and control systems in smart grid/community.

Speech Title

The Future of Software Engineering and Information Management

Speech Abstract

The presentation will focus on AI and smart cities as technologies and application fields that will attract attention in the next decade, and will summarize the relationship between software engineering and information management, which is the main theme of this conference. In addition, the following actual research cases by the presenters will be introduced as examples of research in the area of integration of these new technologies: 1.Smart city data anonymization using AI technology, 2.Smart agriculture application using AI technology, 3.Data anonymization in smart city services

Guest Speaker

Prof. Paulo Batista
University of Évora, Portugal

17:00-17:25 on January 24, 2024
(**Speaker's Local Time: 9:00-9:25 on January 24, 2024**)
Zoom ID: 838 6551 7061 | Password: ICSIM

Biography

"Paulo Batista is PhD Researcher at CIDEHUS.UÉ-Interdisciplinary Center for History, Cultures and Societies of the University of Évora, Portugal, where is the coordinator of the research group 2: Heritage and Literacies. Currently works as a higher technician in the Municipal Archives of Lisbon, and professor at the Iscte-IUL (Master in Architecture and Visual Culture in Lisbon) and Autonomous University of Lisbon, where is coordinator and professor of the Postgraduate in Promotion and Cultural and Educational Dynamization of Archives and Libraries, and the Postgraduate in Architectural Archives. He has lectured in the MS program in Information Science and Documentation at Universidade NOVA de Lisboa and has held senior technician positions at the Portuguese Institute of Cultural Heritage, the Portuguese Institute of Architectural Heritage, and the Torre do Tombo Archives. He has also worked as researcher at the Center for the Study of History and Ancient Cartography of the Institute of Tropical Scientific Research. Paulo Batista holds a Ph.D. in Documentation (University of Alcalá, Madrid-UAH), an MS in Information Science and Documentation - Archival Studies (UNL), and an MA in Documentation (UAH). As part of his doctorate, he also received a Diploma of Advanced Studies in Bibliography and Documentation Retrospective in Humanities (UAH), and he also holds a postgraduate degree in Information Society Law (University of Lisbon) and Information and Documentation Science - Librarianship and Archival Studies (UNL), and a specialization in Good Practices in Patrimonial Management (UNL) and Information Science and Documentation - Archival Studies (UNL). He holds an undergraduate degree in History (University of Lisbon). Paulo Batista is author of several books and about 90 papers published in international journals and conference proceedings. He was also keynote speaker and invited speaker at various international conferences (Portugal, Argentina, Ecuador, Egypt, South Africa, Thailand, China, South Korea and India)."

Speech Title

The information management: from Couture and Rousseau to the Records Continuum Model

Speech Abstract

Following the Second World War an explosion in the quantity of documentation led to a dramatic change in Archiving, or the profession referred to as record managers/records management and archivists/archives. Starting in the 1980s, however, archivists in Quebec began to make great progress by changing their approach and looking at the entire documentary cycle from current to definitive information. Carol Couture and Jean-Yves Rousseau made a crucial contribution towards the understanding of the Three Age Theory that viewed Archiving as an integrated

discipline centered on a structural understanding of archives. In 1994, their work Les Fondements de la Discipline Archivistique, presented a new interpretation of Theodore Schellenberg's Three Age Theory. They called attention to the fact that the three phases of archival documents are not separate but, on the contrary, integrated. They argued that these three stages can even be looked at in a segmented way, provided the union between them is ensured. Their great innovation relative to Schellenberg's work lay, precisely, in critiquing the division and separation between the three ages of archival documents. Couture and Rousseau thereby brought together all the phases of the lifecycle of records, from production to dissemination, in opposition to the sterile distinction advocated by traditional archivists and document managers. However, the best approach to integrating information management is known as records continuum, which places archives in a post-custodial, informational, and scientific paradigm. This Australian concept arose in the 1990s amid the huge explosion of information, communication technologies and new media. This context forced Information Science to redefine its object of study. Records continuum is closely related to the integrated management model of Couture and Rousseau, while it carries their innovation further, perfecting it and replacing it with systemic dynamics and providing continuity between archives. In fact, records continuum means, literally, continuous management. It looks at the whole process from the production of records to their final archiving. Otherwise, we cannot speak of continuous management. That is why, when we speak of rigid archives – current, intermediate, and definitive, this approach is more theoretical than practical. There is, in fact, no separation between these phases, even less so from the point of view of the value of documents. The traditional distinction between information with probative and historical value ceases to exist, because the information is simultaneous and is, in fact, the same.

Guest Speaker

Prof. Gyu Myoung Lee
Liverpool John Moores University, UK

17:25-17:50 on January 24, 2024
(**Speaker's Local Time: 9:25-9:50 on January 24, 2024**)
Zoom ID: 838 6551 7061 | Password: ICSIM

Biography

Gyu Myoung Lee is a professor at the Liverpool John Moores University (LJMU), UK. He is also affiliated with KAIST, Daejeon, Rep. of Korea, as an Adjunct Professor since 2012. Before joining the LJMU in 2014, he worked at the Institut Mines-Telecom from 2008. Until 2012, he was invited to work at ETRI, Rep. of Korea. He worked as a research professor at KAIST, Rep. of Korea and as a guest researcher at NIST, USA, in 2007. His research interests include Internet of Things, digital twin, computational trust, blockchain with privacy preservation, data and AI governance, knowledge centric networking and services considering all vertical services, Smart Grid, energy saving networks, cloud-based big data analytics platform and multimedia networking and services. Prof. Lee has been actively participating in standardization meetings including ITU-T SG 13 and SG20, IETF and oneM2M, etc., and currently serves as a Working Party chair and the Rapporteur of Q16/13 on trustworthy networking and services and Q4/20 on data analytics, sharing, processing and management in ITU-T. He is the Vice-Chair of ITU-T FG-AN and FG-AI4A as well as the Convenor of CG-AIoT and Web3-adhoc. He was also the chair of ITU-T Focus Group on Data Processing and Management (FG-DPM). He has contributed more than 500 proposals for standards and published more than 200 papers in academic journals and conferences. He received several Best Paper Awards in international and domestic conferences and served as a reviewer of IEEE journals/conference papers and an organizer/member of committee of international conferences. He is a Senior Member of IEEE. Prof. Lee received his BS degree in electronic and electrical engineering from Hong Ik University, Seoul, Rep. of Korea, in 1999 and MS, and PhD. degree from KAIST, Daejeon, Rep. of Korea, in 2000 and 2007, respectively.

Guest Speaker

Prof. Amir Akramin bin Shafie

International Islamic University Malaysia (IIUM), Malaysia

17:50-18:15 on January 24, 2024
(**Speaker's Local Time: 17:50-18:15 on January 24, 2024**)

Zoom ID: 838 6551 7061 | Password: ICSIM

Biography

AMIR AKRAMIN SHAFIE is a Professor in the Department of Mechatronics at International Islamic University Malaysia (IIUM) where he has been since 2005. He received his B.Eng. (Hons) in Mechanical Engineering from the University of Dundee and Master of Science in Mechatronics from University of Abertay Dundee, Scotland. He has been conferred a doctorate in the field of Engineering by University of Dundee, Scotland in 2000. Current research interest span both autonomous mechatronic system and intelligent system.

Speech Title

Exploring Neural Network Control for Robot Manipulator

Speech Abstract

Robot manipulators or robotic arms are extensively used in manufacturing sectors. Not just that, they are used in space exploration, military, robotic surgery, food industry among others. The main part of a robot manipulator is the arm that is used to handle or move an object. The basic form of robot manipulator is the single link manipulator. It is nonlinear due to gravitational force, load and posture. In addition, changes in rotor resistance and friction cause uncertainties. Thus, a good, flexible control for manipulator is a required. This book explores different neural network controls for single link manipulator and their performances are presented. The controllers are Neural Network Model Reference, NARMA L2 and Globally Linearizing with PID and Dynamic Neural Network."

ONLINE SESSION

***All schedules will process in Beijing Time (GMT+8)**

18:40-21:10 January 24, 2024	**Session 1 –Data privacy and security protection** **Zoom ID: 838 6551 7061** **Password: ICSIM**
Session Chair: Assoc. Prof. Nithinant Thammakoranonta, National Institute of Development Administration, Thailand	
18:40-18:55 CM1-011	Title: Big Data 4.0 = Meta4 (Big Data) = The Era of Big Intelligence Author(s): Zhaohao Sun Presenter: Zhaohao Sun Presenter's affiliation: PNG University of Technology, Papua New Guinea Abstract: We are living in an age of big data and artificial intelligence (AI). The current questions are: what is the future of big data? What era do we live in? This paper addresses these questions by looking at meta as an operation and argues that we are living in the era of big intelligence through analyzing from meta (big data) to big intelligence. More specifically, this paper will analyze big data from an evolutionary perspective. The paper overviews data, information, knowledge, and intelligence (DIKI) and reveals their relationships. After analyzing meta as an operation, this paper explores Meta(DIKI) and its relationship. It reveals 5 bigs consisting of big data, big information, big knowledge, big intelligence and big analytics. Applying meta on 5 bigs, this paper infers that big data 4.0 = meta4 (big data) = big intelligence. This paper analyzes how intelligent big analytics support big intelligence. The proposed approach in this research might facilitate the research and development of big data, big data analytics, business intelligence, artificial intelligence, and data science.
18:55-19:10 CM2-006	Title: How to Find New Onion Hidden Service based on Blind Secret Key? Author(s): Jianwei Ding, Xinze Li, Hang Li, Zhouguo Chen Presenter: Jianwei Ding Presenter's affiliation: 30th Research Institute of China Electronics Technology Group Corporation, China Abstract: With the development of Internet technology and privacy protection, anonymous network technology is widely used to browse, publish and deliver private or sensitive information on the Internet, such as The Onion Router (Tor). Tor is the most widely used service to protect the user's privacy, because of its bidirectional anonymous mechanism, which makes it so difficult to

	correlate and find the real Tor web service provider. Actually, Tor is the most influential dark web that contains a lot of illegally sensitive information, which becomes a big challenge to find the new Onion service quickly. Since Tor's specific communication mode makes the instant detection for new Onion service becomes more and more impossible. Before Tor V3 protocol was released, the researcher is able to use reverse calculation to get the real time Tor web service address by deploying the Tor honey pot. Although, with Tor V3 protocol is all updating, which introduces blind key secret to encrypt the Tor onion service's hash code, intended to make it impossible to get the real time Tor web service address by reverse calculation. Hence, this paper analyzes the Tor's blind key secret mechanism, and propose an estimation method of Tor hidden service's scale based on the binding relationship with the blinding key secret and the Tor hidden service's address, by deploying the Tor hidden service honey pot. According to the binding relationship in the 24 hours, we are able to calculate the Tor hidden service's scale, which help us to have a good command of Tor's overall operation situation. We also present empirical results of our ongoing experimentation and the Tor's real statistics with it, which verify the feasibility of our proposed method.
19:10-19:25 CM1-015	Title: Data, analytics and Intelligence: A Unified Approach Author(s): Zhaohao Sun Presenter: Zhaohao Sun Presenter's affiliation: PNG University of Technology, Papua New Guinea Abstract: We are living in an age of data, analytics, and intelligence. After reviewing a dozen different books on big data, data analytics, data science, Artificial intelligence (AI), and business intelligence, there are the current questions: 1. What are the relationships between data, analytics, and intelligence? 2. What are the relationships of big data and big data analytics? 3. What is the relationship between business intelligence and data Analytics? This paper first discusses reshaping the world and the heuristics of Greek philosopher Plato and French mathematician Descartes. Then it addresses these above questions based on a Boolean structure, which destructs big data, data analytics, data science, AI into data, analytics, and intelligence as the Boolean atoms. Then data, analytics, and intelligence are reorganized and reassembled, based on the Boolean structure, to data analytics, analytics intelligence, data intelligence, and data analytics intelligence. The research will analyse each of them after examining the system intelligence. The proposed approach in this research might facilitate the research and development of big data, data analytics, AI, and data science.
19:25-19:40 CM1-014	Title: Network-Transparent Service Container and Migration with Information Distribution Management in Edge Environments Author(s): Yohei Namba, Shogo Shimahara and Hiroaki Nishi

	Presenter: Yohei Namba Presenter's affiliation: Keio University, Japan Abstract: Smart communities use myriad IoT devices and the data they transmit to perform global optimization. In network-transparent service provision, data transmitted from IoT devices are analyzed using network devices such as switches and routers in the edge region to add value to the data without modifying the IoT devices. However, to establish a mechanism for providing such network transparency services while complying with the opt-in or opt-out of data provided by users, data distribution management is necessary to determine the stored location and path of the target data. In addition, because a smart community environment is assumed to be a heterogeneous computing-resource environment, it is necessary to envision a dynamic relocation function for transparent network services considering the usage of computing resources. In this study, we proposed a method for managing and migrating transparent network services deployed on edge nodes using containers and linked it to an existing information distribution management mechanism that enables data distribution management at the service level. In the experiments, we confirmed that dynamic placement was possible under a load. We also measured the response delay associated with the provision of a transparent network service and confirmed that the associated processing delay was approximately 10 ms.
19:40-19:55 CM1-1012	Title: Study on Course Group based on Clustering Algorithm and Association Rules Author(s): Xiqin Ao, Weiwei Wu, Cuicui Meng, Aixiang He Presenter: Xiqin Ao Presenter's affiliation: Anhui Xinhua University, China Abstract: In order to meet the needs of new engineering education, a course system for training new engineering talents should be established. The correlation analysis, cluster analysis and association mining of the scores of students majoring in software engineering are carried out to investigate the correlation between courses. According to the analysis results, the professional course group is formed. The research results can provide a basis for the formulation of talent training plan and professional reform of software engineering specialty.
19:55-20:10 CM1-053	Title: A Low-Ops IaaS Cloud Framework based on Cloud-native Architecture Author(s): Haotian Zhao and Yuchen Sun Presenter: Haotian Zhao Presenter's affiliation: Beijing University of Posts and Telecommunications, China

	Abstract: With the development of Infrastructure as a Service (IaaS) systems, the complexities of deployment and configuration processes, alongside the elevated operational and maintenance costs, present numerous challenges. Therefore, this paper proposes a Low-Ops Framework based on Cloud-native Architecture. In this framework, we design a compact IaaS Virtualization Control Access (VCA) Module to simplify the deployment and configuration process. Simultaneously, we develop an efficient Operations and Maintenance (O&M) Module to enhance operational and maintenance efficiency. Additionally, within the VCA Module, a privileged agent is proposed to control VMs on hosts across the container isolation barrier. Finally, we implement a system based on the proposed framework, and extensive experiments demonstrate its effectiveness, offering a 2.3% improvement compared to the state-of-the-art designs.
20:10-20:25 CM1-076	Title: The use of virtual desktop pools to meet course outcomes during the COVID-19 pandemic Author(s): Stephen Mujeye Presenter: Stephen Mujeye Presenter's affiliation: Illinois State University, United States Abstract: The outbreak of COVID-19 has changed all our lives. In academia, we have had to take another look at how we teach and deliver courses. Learning was not put on hold as a result of the pandemic. We had to look at innovative ways of teaching and providing student content. Illinois State University has technology labs essential to fulfilling the lab requirements for technology-based courses. Students were not able to come to the physical labs as a result of the pandemic. This article outlines some strategies used to meet the lab requirements in ways that did not compromise the quality of education delivered. Virtualization technology allows students to complete their lab requirements from anywhere in the world. All they needed was access to a computer and a reliable Internet connection. In the virtual environment, resources are provided virtually instead of physically. Furthermore, system virtualization uses an encapsulation software layer surrounding an operating system. It provides computing functions such as input, output, storage, and processing in the same way as physical hardware. While virtualization has been around for decades, it has gained popularity in the last decade. The benefits of virtualization were leveraged during the pandemic to provide students with labs virtually. Virtual desktop pools were created, and students were given access. Virtual desktop pools, a group of virtual desktops hosted on identically configured virtual machines, were deployed for students. The virtual desktop pools were loaded with software students use in physical labs. The software included Visual Studio, NetBeans, Packet Tracer, and Scene Builder. Because of the implementation of virtual desktop pools, students could

	complete required labs and meet all the course outcomes.
20:25-20:40 CM2-009	Title: Smart Contract System Architecture in the Peruvian Real Estate Sector Based on Blockchain to Prevent Fraud Author(s): Andres Raul Dolorier Quiroz, Christian Manuel Valera Murillo, Pedro Segundo Castañeda Vargas Presenter: Andres Raul Dolorier Quiroz Presenter's affiliation: Universidad Peruana de Ciencias Aplicadas, Peru Abstract: Within Peru's real estate realm, marked by discrepancies and opacity, this investigation explores the deployment of blockchain as a pioneering corrective, with Polkadot platform at its core. The study introduces a meticulous 6-stage smart contract protocol, encompassing the journey from initial recordal to blockchain-based contract consolidation. This methodology doesn't just forge an unalterable record; it also curtails intermediary dependence, thus bolstering transactional transparency and integrity. Initial findings endorse the viability and transformative potential of this approach, predicting a substantial evolution in Peru's property market. Moreover, in light of adapting to Peru's specific regulatory needs, the study underscores Polkadot's suitability over alternatives like Ethereum, marking it a superior choice in this national framework.
20:40-20:55 CM1-092-A	Title: The results of security posture and preparedness to respond to a cybersecurity attack of small to medium-sized enterprises Author(s): Stephen Mujeye Presenter: Stephen Mujeye Presenter's affiliation: Illinois State University, United States Abstract: Small to medium-sized enterprises (SMEs) are integral in developed countries like the United States. SMEs significantly contribute to the overall gross domestic product (GDP). The number of cybersecurity attacks has continued to increase over the years. Unlike big enterprises, SMEs, unfortunately, have historically not been able to respond to cybersecurity attacks effectively, and they continue to lose revenue because of the negative consequences. Most SMEs have limited resources and insufficient training to thwart cybersecurity attacks. Nearly half of all cybersecurity attacks target SMEs. Therefore, this study assessed SMEs' security posture and preparedness to respond to a cybersecurity attack before and after security awareness training. A purposive sample of SMEs in central Illinois was identified for this study. A pretest survey was administered to individuals responsible for managing information technology (IT) at the identified SMEs. The survey questions were selected from the five functions of identity, protection, detection, response, and recovery in the NIST's Cybersecurity Framework. The

	pretest survey was followed by cybersecurity training. The training modules covered the same functions in the Cybersecurity Framework. A post-test survey was administered after the training. The data was analyzed using the multivariate analysis of variance. The results revealed differences in the SMEs' ability to identify risks on assets, protect critical infrastructure, detect cybersecurity events, respond to detected cybersecurity events, and recover impaired services before and after the training. An analysis of the results indicated that individuals responsible for managing IT scored higher in areas including identifying asset vulnerabilities, protecting access to systems and assets, and monitoring and detecting anomalies from baselines. Furthermore, the individuals also scored higher in their ability to respond to newly identified vulnerabilities and mitigate and update recovery plans and strategies. The results revealed the benefits of assessing an organization's security posture and training effects. It is, therefore, important for SMEs to constantly engage in cybersecurity training since raising awareness improves the security posture of organizations. The results can be applied to all SMEs that rely on information systems in their business.
20:55-21:10 CM2-018	Title: Using Data Mining to Uncover Association of Philippines' Demographic Data to Tuberculosis Author(s): KIMBERLY B. HERNANDO, MARY JANE C. SAMONTE Presenter: KIMBERLY B. HERNANDO Presenter's affiliation: Mapua University, Philippines Abstract: This study aims to address the challenge of tuberculosis (TB) case finding in the Philippines using data mining. Utilizing the Apriori algorithm and classification-based association (CBA) model, this study focuses on demographic data, including Age, Sex, Marital Status, Educational Attainment, Wealth Index, and Region, to accurately predict TB-positive cases. Rigorous data preparation, including cleaning and feature engineering, enhanced the model's predictive accuracy. With a support value of 0.04 and a confidence value of 0.73, the CBA model achieved commendable results, exhibiting a True Positive Rate (TPR) of 73.32% in the training set and 77.14% in the test set. False positives were minimized with low False Positive Rates (FPR) of 30.78% and 30.43% in the training and test datasets. The study also employs post-processing association rules using clustering and objective measures (PAR-COM) to uncover TB patterns, refining 244 rules to 30 across 10 clusters. The findings provide a promising framework for effective TB detection, paving the way for targeted interventions

ONLINE SESSION

***All schedules will process in Beijing Time (GMT+8)**

9:30-11:45 January 25, 2024	**Session 2 –Service based application design and system evaluation** **Zoom ID: 838 6551 7061** **Password: ICSIM**
Session Chair: Dr. Yinpu Li, Florida State University, USA	
9:30-9:45 CM1-1015	Title: The Impact of Large Language Models on Social Media Communication Author(s): Jinhu Qi Presenter: Jinhu Qi Presenter's affiliation: University of Southern California, US Abstract: This article explores the impact of large language models (LLMs) on social media communication, with a focus on the spread of misinformation and cyberbullying. As social media becomes an integral part of modern life, challenges such as the rapid spread of misinformation and unethical online behavior continue to escalate. In this paper, the lab's main research delves into how large language models can improve the accuracy of information dissemination on platforms such as Twitter with their advanced capabilities and larger parameters. It also highlights the application of LLMs in identifying and filtering misinformation, as well as potential ethical and privacy considerations associated with their use. The studies mentioned here also explore the impact of LLMs in shaping social media communications, addressing technological advancements, and attendant social responsibilities.
9:45-10:00 CM1-023	Title: Geospatial Factors Applied to Road Accidents: A Review Author(s): Richard Watson and Peter Ryan Presenter: Richard Watson Presenter's affiliation: Ryan Watson Consulting Pty Ltd., Australia Abstract: Road accidents are a major source of trauma worldwide due to increasing numbers of vehicles and drivers. Considerable data has been collected on road accidents and this is frequently published as open data on the internet. These datasets include parameters such as accident type and number of fatalities as well as environmental variables such as road type, demographics, and area infrastructure. Geospatial analysis provides a means of understanding spatial factors that influence road accidents such as the built infrastructure, natural environment features such as hills and vegetation, traffic

	volume, and road design and construction. Geospatial visualization techniques can also help identify hotspots and blackspots. The Moran I, Getis-Ord, and Kernel Density Estimation techniques are the most commonly-used geospatial tests and their application is reported in many papers. This paper provides a review of geospatial factors that are relevant to road accidents.
10:00-10:15 CM1-005	Title: Employing Naïve Bayes Algorithm in the Analysis of Students Academic Performances Author(s): Pilita Amahan Presenter: Pilita Amahan Presenter's affiliation: Occidental Mindoro State College, Philippines Abstract: This study aims to help teachers and school administration categorize students' academic performances based on the final grades of the students in the academic year 2020-2022. In order to mentor and support the performances of the students, this study aims to identify the cluster center of the students' performances along with data mining. The Naïve Bayes algorithm was trained using a total of 3000 datasets. It has been shown that the classification attained the highest accuracy of 96 percent with ten cross-validations and a split test of 70:30 between the ratio of training and testing data. The study used four attributes, including quizzes, laboratory drills, assignments, and attendance. As a result, the quiz achieved the centroid point of 86 percent, 90 percent on the laboratory drills, 85 percent on the assignments, and a "B" for attendance. In order to make further progress, the study intends to concentrate on other aspects of evaluating student performance as a characteristic to be looked and being able to distinguish the mode with the highest accuracy of the results of many other algorithms.
10:15-10:30 CM1-1021	Title: Research on public housing allocation based on public housing information management system-Take Wuhan University of Technology Author(s): Xie Yi, Wu Yuting, Luo Xu Presenter: Wu Yuting Presenter's affiliation: Wuhan University of Technology, China Abstract: With the continuous development of colleges and universities and the continuous expansion of enrollment scale, the public housing resources have become an important factor in the development of colleges and universities. In order to promote the high-speed and high-quality development of colleges and universities, it is urgent to carry out an all-round deepening reform and keep pace with the times. Facing the " 14th five-year plan " development plan, public housing management should be combined with the needs of school personnel training, discipline construction, scientific research, etc. , in accordance with the principles of"Classified management, quota accounting, paid use, dynamic configuration", through the information-based public

	housing management system, to achieve public housing allocation fair and reasonable, standardized flow, efficient use, maximize the housing use efficiency, and ultimately achieve the goal of public housing optimization allocation, for the development of schools.
10:30-10:45 CM1-050	Title: Predicting ESG Ratings by Machine Learning and Analyzing Influencing Factors by XAI Author(s): Jeong-Cheol Choi, Qiuying Chen and Sang-Joon Lee Presenter: Jeong-Cheol Choi Presenter's affiliation: Chonnam National University, South Korea Abstract: This study examines the role of Environmental, Social, and Governance (ESG) management in corporate strategy, particularly focusing on predicting ESG ratings with machine learning. Given the diverse ESG evaluation criteria employed by global rating agencies, there's a need for clear guidelines to facilitate effective ESG management. The research aims to develop an ESG rating prediction model utilizing a triennial compendium of Korean corporate financial data. This process involves a comparative analysis of linear models, tree-based models, and neural network-based models. Additionally, this study explains the importance of various variables by applying SHAP, one of the XAI techniques. The results indicate that XGB is the most effective, achieving an 85.1% F1 score in ESG rating predictions. By understanding how financial factors impact ESG ratings, companies can develop more effective ESG strategies, forming an essential foundation for sustainable growth.
10:45-11:00 CM1-066	Title: Lightweight Cloud Native Application Management Platform Author(s): Yanpiao Chen and Shan Peng Presenter: Yanpiao Chen Presenter's affiliation: Beijing University of Post and Telecommunications, China Abstract: In order to achieve comprehensive management and integration necessary for digital transformation, a large number of enterprises are now seeking solutions to establish an application management platform.While analyzing the development of application management platforms, it has been observed that they face numerous challenges and issues. One of the major challenges is the significant diversity in the environments where different applications operate. Various applications may be based on different technology frameworks, programming languages, or rely on different underlying infrastructures, leading to the complexity and difficulty in managing these diverse applications. However, the introduction of cloud-native technology has provided important solutions and opportunities to address this issue.We have implemented a lightweight cloud-native application

	management platform specifically designed for small and medium-sized enterprises. This management platform aims to provide various types of application runtime environments for different digital applications within an enterprise, supporting container-level application execution and offering comprehensive application management functionalities. By supporting multi-layered application templates (including Helm Chart templates, native YAML templates, etc.), it simplifies application deployment, achieving lightweight application deployment. Leveraging this application management platform, enterprises can rapidly establish and maintain their infrastructure for digital transformation.
11:00-11:15 CM1-1026	Title: College student employment quality assessment model based on BiLSTM-CNN Author(s): Chunjiing Wang, Xu Luo, Yue Hong Presenter: Yue Hong Presenter's affiliation: Wuhan University of Technology, China Abstract: Amidst a worsening employment landscape, evaluating student employment quality becomes pivotal in bridging higher education and the labor market. This assessment yields crucial insights for educational institutions, aiding them in aligning teaching outcomes with students' career success. In the face of a dynamic and uncertain global job market, traditional evaluation models fall short due to oversimplification. This paper introduces an innovative BiLSTM-CNN neural network-based model, overcoming these limitations. Through extensive training on a diverse university dataset, the model achieves a remarkable 96% accuracy in evaluating student employment quality, surpassing classic models. This breakthrough not only enhances accuracy but also fosters a more effective connection between higher education and the evolving job market demands.
11:15-11:30 CM1-037	Title: Automatic Classification of Museum Artifacts based on Unsupervised Models Author(s): Hao Wang Presenter: Hao Wang Presenter's affiliation: Ratidar Technologies LLC, China Abstract: China owns a rich history of thousands of years. Since government income has become more and more affluent, museums in China started to be rebuilt and refurbished with hundreds of thousands of new exhibits added during the past decade. However, the manual labor of classifying museum artifacts remain a tedious and prolonged work for many archaeologists. In this paper, we propose to use unsupervised models to automatically classify museum artifacts. We provide detailed overview of our results in the experiment section. Although our approach is superficial compared to deep

	neural network models in other fields, our work relies on the uniqueness of our dataset and the pioneering thought of the idea itself.
11:30-11:45 CM1-040	Title: A measured inclusion of an RTI tool for the South Pacific Author(s): Bibhya Sharma, Pritika Reddy and Vineet Singh Presenter: Pritika Reddy Presenter's affiliation: Fiji National University, Fiji Abstract: Good Governance of any country is reflected through transparency and accountability of its activities and the availability of information and open data in a timely manner to its citizens. The Right to Information (RTI) Act guides the government and its citizens to achieve the objectives availability, and effective communication between the government and society, hence leading to good governance. While there are about 135 countries globally who have adopted the RTI Act, the Act is yet to be fully enacted in Fiji and the advocacy and awareness about RTI is in the infancy stage. This study entails details of an RTI awareness initiative in Fiji through the design and implementation of an e-course. The RTI e-course was developed using Articulate Storyline 360 and integrated into a learning management platform – Moodle. The course was then piloted to the university students in Fiji, Tonga and Vanuatu. The effectiveness of the course was measured in terms of course completion and collected feedback using an online questionnaire. The results from the Cronbach Alpha test showed that the RTI e-course was valid and reliable. Furthermore, the participants were satisfied with the design, structure and content of the e-course. The RTI e-course is the first-ever course on RTI as such this can be used by South Pacific countries to create awareness and educate their populace on their right to information. The awareness created will assist the people of the South Pacific to be more aware of the activities carried out by the government and eventually improve civic engagement and participation of the South Pacific populace to economic development of their society.

ONLINE SESSION

***All schedules will process in Beijing Time (GMT+8)**

14:00-16:45 January 25, 2024	**Session 3 –Visualization and Virtual Technology in Image Processing** **Zoom ID: 838 6551 7061** **Password: ICSIM**
Session Chair:	
14:00-14:15 CM2-012	Title: Deep Learning Method for Leakage Location Detection of Pneumatic Systems Based on Infrared Thermal Image Evaluation Author(s): Jiaqi Chang, Yan Shi, Liman Yang, Yanxia Niu, Yulong Nie, Zhiguo Yang, Lei Li, Wenchao Zhang Presenter: Jiaqi Chang Presenter's affiliation: Beihang University, China Abstract: Pneumatic systems are an essential fluid transmission method in the industrial field, which can achieve the transmission and control of power or signals. Leakage in pneumatic systems is challenging to detect and is a highly harmful fault. Most existing leak detection methods use flow or pressure sensors to detect specific leakage amounts, while leak localization is still in the traditional manual detection, which significantly restricts localization efficiency. This article establishes a deep learning framework-based thermal image localization method for pneumatic system leak detection. Infrared images captured in the pneumatic system were collected, and then a deep-learning localization method based on the YOLO framework was established. Then, the recognition accuracy of this method was calculated. The results indicate that the accuracy has reached 99.5% of mAP_0.5 and 86.27% of mAP_0.5:0.95, indicating that this work is a meaningful study that can apply intelligent computing to engineering.
14:15-14:30 CM1-034	Title: Comparison and Analysis of Three MobileNet-based Models for Wildfire Detection Author(s): Shiyan Du, Jiacheng Li and Masato Noto Presenter: Shiyan Du Presenter's affiliation: Kanagawa University, Japan Abstract: The dynamic equilibrium of ecosystems can be maintained through controlled burning, but excessive wildfires can lead to severe consequences. Therefore, the use of Internet of Things (IoT) devices equipped with deep

	image processing models for wildfire detection has recently become a trend. Conventional deep image processing models suffer from accuracy issues and large model sizes, limiting their applicability on small IoT devices. To address this challenge, we utilized lightweight deep image processing models such as the MobileNet series to train a wildfire database. Furthermore, we evaluated three different versions of MobileNet (V2, V3 Large, and V3 Small) using a cross-entropy loss function to compare their accuracy and training times. Through data analysis, recommendations for deploying MobileNet models on IoT devices are provided. The results indicate that the ranking of MobileNet's accuracy from highest to lowest is V2, V3 Large, and V3 Small; the ranking of loss values from lowest to highest is V2, V3 Large, and V3 Small; and the ranking of training times from fastest to slowest is V3 Large, V2, and V3 Small.
14:30-14:45 CM1-1007	Title: Construction of Virtual Simulation Teaching Platform for Risk Experimental Projects in VR Environment Author(s): Fu Gaocai, Xiao Jun, Huang Peide, Ni Minhui, Liu Xianjv Presenter: Fu Gaocai Presenter's affiliation: Wuhan University of Technology, China Abstract: Given the lack of immersive operation experience in traditional virtual simulation experiments, and some experimental projects in colleges are dangerous in the process of experimental operation, with the help of new industrial development technology, the construction of the virtual simulation platform for risk experimental projects in virtual reality (VR) environment is completed, which applied to experimental teaching. Firstly, the 3D model resources built by mechanical students using computer aided design (CAD) are integrated through the crowdsourcing mode, the virtual simulation environment is established with Unity3D, and the display and motion model of the virtual hand is constructed according to the principle of bionics. Then, with the help of the LeapMotion somatosensory controller, Htc vive helmet, and other equipment, the construction and practice of the virtual simulation platform of the experimental project were explored through VR technology. Finally, the experimental teaching taking the reducer disassembly and assembly experiment as an example shows that the platform can complete the specific experimental operation with an immersive experience under the premise of ensuring the safety of the experiment, which provides a useful reference for the upgrading and transformation of traditional experimental teaching methods.
14:45-15:00 CM1-035	Title: Parenting Support System Based on Improved VGG19 Network Author(s): Yan Zhang, Jiacheng Li and Masato Noto Presenter: Yan Zhang Presenter's affiliation: Kanagawa University, Japan

	Abstract: Deep Convolutional Neural Networks (CNNs) have made significant advancements in Infant Facial Expression Recognition (FER) tasks. However, conventional methods for emotion recognition face challenges such as sample imbalance, lack of diversity, large model parameters, long training times, and low accuracy. In response, we propose an approach for infant facial expression recognition based on an improved VGG19 (Visual Geometry Group) network. Our approach utilizes the ImageDataGenerator data augmentation technique to enhance data diversity, and we also introduce architectural improvements to the model and design a custom loss function. After numerous experiments and research iterations, our experimental findings demonstrate that this approach not only reduces training time but also significantly reduces the number of model parameters while slightly improving accuracy. Most importantly, we successfully applied the enhanced model to a parenting support system and were able to provide strong support for real-life infant emotion analysis and recognition. This research outcome holds significant implications for the fields of infant care and emotion detection.
15:00-15:15 CM1-089	Title: Infrared weak small ship detection based on improved local contrast algorithm Author(s): Qinghua Zhu, Weidong Yuan Yuan, Chen Yucong, Runping He and Zhefei Wang Wang Presenter: Runping He Presenter's affiliation: Ningbo Dehong Enterprise Development Co.,Ltd, China Abstract: Due to an increasing number of transmission lines choosing to cross river channels for construction, large ships are prone to colliding with power lines and causing maritime traffic accidents, resulting in economic losses and casualties. For the problem of difficulty in recognizing ships in long-range infrared charts of the sea surface, this paper provides an improved local comparison algorithm for infrared weak ship detection. Firstly, the maximum median filter is utilizing to denoise the infrared images of maritime vessels to suppress the background edge information in the infrared images; Secondly, the improved local contrast operator with suppression weighting factor is adding to the filtered resultant image, which can enhance the brightness value of the filtered small target and further suppress the residual background clutter; Finally, the desired target vessel is obtained by adaptive thresholding. The method proposed in this paper can effectively improve the suppression effect of complex background and effectively detect infrared ship targets, so as to obtain infrared ship target images at sea.
15:15-15:30 CM1-095	Title: Design of Portable Non-contact Physiological Data Acquisition System Author(s): Zandong Tian, Qian Chen, Jiahe Peng, Dongyuan Zang, Mianshi Feng, Weihua Su Presenter: Zandong Tian

	Presenter's affiliation: Hebei University of Technology, China Abstract: With the improvement of living standards, there is an increasing focus on individual health conditions. Benefiting from technological advancements, non-contact physiological detection methods based on facial videos have transitioned from laboratory settings to everyday life. Due to its convenience, non-invasiveness, and contactless nature, this method exhibits extensive prospects. This paper presents the design and implementation of a remote vital signs monitoring system characterized by portability, real-time data collection, data processing and analysis, as well as storage capabilities. Multiple sensor circuits are meticulously designed, and factors influencing the accuracy of Remote Photoplethysmography (rPPG) are compared and analyzed. The paper also outlines the key directions for noise removal algorithms to enhance accuracy.
15:30-15:45 CM1-1010	Title: WHAT REALLY MATTERS? TURNOVER INTENTION FACTORS OF SOFTWARE DEVELOPERS Author(s): Dagmara Lewicka, Paweł Zając, Roman Batko Presenter: Dagmara Lewicka Presenter's affiliation: AGH University of Krakow, Poland Abstract: This study's purpose is to identify the factors influencing turnover intention in software developers. Its relevance is related to the shortage of software developers in the labor market both within and outside the EU, and their relatively short employment periods in individual companies, which causes high costs and knowledge outflow. This study therefore aims to analyse the links between different combinations of causal conditions: human resource management climate, affective and calculative commitment, work engagement - dedication, horizontal trust, gender and tenure of software developers. In addition, the study analyses the outcome [the presence or absence of turnover intention] among software developers tested, using a qualitative comparative analysis and fuzzy-sets method. Thus far, scholars have assumed that affective commitment is a fundamental factor in discouraging turnover intention. However, this study shows that calculative commitment, rather than affective commitment, plays such a role in case of software developers. Still, it is worth noting that HRM process, affective commitment, and work engagement are noticeably lower among individuals planning to change their job. The study shows that the relationship between factors is nonlinear, highlighting the need for a nuanced understanding of the interplay among various conditions. The findings offer valuable insights for organizations seeking to tailor strategies to retain software development professionals.
15:45-16:00 CM1-1032	Title: Ensemble Model of Lanczos and Bicubic Interpolation with Neural Network and Resampling for Image Enhancement

	Author(s): Ronie Bituin, Ronielle Antonio Presenter: Ronie Bituin Presenter's affiliation: Macquarie University Abstract: In the field of image processing, enhancing image resolution through upscaling and downscaling poses significant challenges. This study investigates the efficacy of an ensemble model combining Lanczos and Bicubic interpolation methods, augmented by neural network techniques, for image enhancement. We applied an innovative ensemble model, integrating Lanczos and Bicubic algorithms, to a variety of images. The model's performance was rigorously evaluated using Mean Squared Error (MSE) and Peak Signal-to-Noise Ratio (PSNR) across different scenarios, including varying image scales and device origins. The results revealed that while each algorithm has unique strengths, the ensemble model demonstrated superior performance in certain aspects, particularly in the context of image origin and scaling. These findings suggest the potential of ensemble models in image enhancement and underscore the need for further exploration into advanced interpolation techniques for improved image processing. Future research should focus on expanding testing parameters and exploring alternative algorithms to further advance the field of image enhancement.
16:00-16:15 CM1-1001	Title: Unmanned Aerial Vehicle (UAV) Predictive Control Energy Management Model Author(s): Nina Hendrarini, Muhammad Ihsan Sani Presenter: Nina Hendrarini Presenter's affiliation: Telkom University, Indonesia Abstract: Limited battery capacity is a problem that needs to be overcome because the battery is the Unmanned Aerial Vehicle's energy source. Optimization is carried out based on battery usage patterns. Predictive model method in managing energy usage [1], even though there are additional energy sources such as solar cells. This system is known as a hybrid energy source. Energy consumption patterns shoul be analyzed before applying algorithmic prediction models. Creating a precise energy consumption prediction model is an important topic. A general consensus regarding energy consumption models has not been reached at this time, so there are many variations in models and their complexity. This research applies a battery management system by considering several UAV performance parameters. Parameters that are considered to significantly influence performance and energy consumption are altitude and speed. The higher and faster a vehicle goes without maintenance, the more energy it uses. Energy availability is the main problem in order for the system to work sustainably. Based on the simulation modeling, a correlation was obtained between the type of UAV movement and the

	regulation of energy use. This correlation can also be realized mathematically. Then it can also be interpreted physically as to what the drone should do with the existing battery availability configuration.
16:15-16:30 CM1-070	Title: How Natural Language Processing Enables AIGC Recognition? --Latest Trends and Future Prospects Author(s): Weizheng Wang and Hong Qiao Presenter: Weizheng Wang Presenter's affiliation: Shandong Normal University, China Abstract: As the technology behind large language models advances rapidly, AI-generated content (AIGC) pervades our daily lives. Classifiers that identify AIGC play a crucial role in distinguishing between text generated by humans and that generated by artificial intelligence. In order to better prevent the abuse of AIGC and reduce the emergence of issues such as false information, academic misconduct, and deceptive comments, we introduced the task of AIGC classifiers, emphasizing the necessity of classifier development in this era. The essence of AIGC identification tasks lies in binary classification, aiming to discern whether a piece of content is created by artificial intelligence. In recent years, white-box and black-box methods as classifiers for identifying AIGC have made significant strides. In this paper, we curated the main research achievements in the field of AIGC identification, emphasizing the crucial role of comprehensive and excellent datasets in constructing AIGC recognition classifiers. Additionally, we explored the limitations and development goals of current popular datasets, as well as potential datasets. Furthermore, we analyzed paradigms of various classifiers, addressing challenges such as multidomain recognition tasks, cross-language recognition tasks, and data ambiguity issues. Finally, we proposed pathways for the future development of AIGC identification. This study aims to provide a clear overview for relevant researchers and offer constructive suggestions for constructing more stable and efficient classifiers.
16:30-16:45 CM1-1005	Title: Between Theory and Value Transactions: A Multifaceted Exploration of Relevance and Resilience of Decentralised Autonomous Organisations Author(s): Paweł Pinio, Roman Batko, Dagmara Lewicka Presenter: Roman Batko Presenter's affiliation: AGH University of Krakow, Poland Abstract: The emergence of decentralized autonomous organizations (DAOs) represents a paradigm shift in the organizational structure enabled by distributed digital ledger technologies such as blockchain. Exclusively digital web-based entities, DAOs function independently through blockchain-based

	smart contracts that rely on distributed governance, community coordination, and incentive mechanisms rather than top-down hierarchies. As DAOs continue to foster an environment conducive to a new class of digital participants, they are becoming increasingly prominent in the digital cryptocurrency economy, raising questions regarding their structure, sustainability, and adoption. Being collectively owned and managed by their members, DAOs exhibit characteristics of both non-zero and zero-sum dynamics, thereby posing a challenge to conventional centralized and hierarchical management models. This mixed-methods study examines DAOs within modern information ecosystems through a literature review, blockchain analysis, and comparative organizational analysis. The literature review synthesizes academic discourse on DAOs, highlighting key theories, such as decentralization, digital governance, and distributed decision-making. Blockchain analysis of 10 leading DAOs provides engagement and activity metrics. Comparative analysis considers the DAOs' advantages and challenges in relation to traditional centralized organizations, focusing on aspects such as governance, efficiency, and adaptability. The findings reveal DAOs' innovative potential and adoption barriers, such as reliance on token incentives and difficulties with coordinated decision-making due to reasons like concentration of voting power and others. Although DAOs possess advantages in terms of decentralization, community alignment, and transparent algorithmic execution, traditional organizations currently maintain superiority in terms of stability and legal standing. This study provides an interdisciplinary academic perspective on the concept and implementation of the DAO by combining conceptual understanding, empirical blockchain evidence, and comparative analysis. It is concluded that realizing the transformative potential of DAOs requires synthesizing multidisciplinary insights and overcoming substantive adoption hurdles. The proposed framework serves as a foundation for further research on the evolution and integration of DAOs into organizations of the future.