

Welcome Message from General Chair

Dear Esteemed Researchers and Participants,

On behalf of the organizing committee, it is my great pleasure to welcome you to ICFICE 2024. We are thrilled to bring together experts and researchers to share innovative ideas, research findings, and advancements in the field of Information Technology.

This conference serves as a platform for fostering collaboration, exchanging knowledge, and exploring the latest trends shaping the IT landscape. We are confident that the diverse perspectives and expertise gathered here will contribute to the continued growth and evolution of our dynamic field.

May this conference be a rewarding experience for all, filled with insightful discussions, networking opportunities, and inspiration for future endeavors. Over the years, our association has made efforts to select notable papers in ICFICE proceedings and publish them in SCI and SCOPUS level journals, and we will continue to do so this year. Finally, we express our heartfelt gratitude to the program committee members, dedicated paper reviewers, and all contributors for their papers. Thank you for being part of this exciting journey, and here's to another year of scholarly achievements and shared accomplishments.

Best wishes,

Dr. and Prof. Hee-Cheol Kim
General Chair of ICFICE 2024

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Jung-Hun Lee (Pusan National University, Korea)

Conference Schedule Overview

● Registration

- Time : 13:00~14:30 (11th ~ 13th January, 2024)
- Place : Grand Ballroom(1F), Promenade Hotel Kota Kinabalu, Malaysia

● Opening Ceremony / Keynote Speech

- Time : 15:40~17:00 (11th January, 2024)
- Place : Grand Ballroom(1F), Promenade Hotel Kota Kinabalu, Malaysia
- Keynote Speech
Title : Kansei Engineering Approach: Exploring User Emotions in Multimedia Design
Speaker : Dr. Nur Faraha (University Malaysia Sabah)

● Luncheon

- Time : 12:00~13:00 (11th ~ 13th January, 2024)
- Place : Restaurant(GF), Promenade Hotel Kota Kinabalu, Malaysia

● Business Meeting

- Time : 13:30~13:50 (11th ~ 13th January, 2024)

● Technical Session

- Time : 14:00~16:50 (11th ~ 13th January, 2024)
- Place : Grand Ballroom(1F), Promenade Hotel Kota Kinabalu, Malaysia

● Closing Ceremony

- Time : 16:50~17:00 (13th January, 2024)

ICFICE 2024 THE 16th INTERNATIONAL CONFERENCE ON FUTURE INFORMATION & COMMUNICATION ENGINEERING	
11th January, 2024, Promenade Hotel Kota Kinabalu, Malaysia	
12:00~13:00 (Restaurant, GF)	Luncheon
Technical Session : ORAL	Session BI-A, AI-A Prof. DaeHan Ahn (University of Ulsan)
14:00 ~ 15:40 (Grand Ballroom, 1F)	BI-1
	AI-1
	BI-2
	BI-3
	AI-2
15:40~17:00 (Grand Ballroom, 1F)	Opening Ceremony / Keynote Speech

* BI : Biomedical Imaging and Engineering
 AI : AI and Intelligent Information System

ICFICE 2024 THE 16th INTERNATIONAL CONFERENCE ON FUTURE INFORMATION & COMMUNICATION ENGINEERING	
12th January, 2024, Promenade Hotel Kota Kinabalu, Malaysia	
12:00~13:00 (Restaurant, GF)	Luncheon
Technical Session : ORAL	Session IT-A, MD-A, IB-A Prof. Seong-Yoon Shin (Kunsan National University)
14:00 ~ 15:20 (Grand Ballroom, 1F)	IT-1
	MD-1
	MD-2
	IB-1
Technical Session : ORAL	Session CA-A, AI-B, IT-B Prof. Dongsik Jo (University of Ulsan)
15:30 ~ 16:50 (Grand Ballroom, 1F)	CA-1
	AI-3
	AI-4
	IT-2

* IT : IT Convergence Technology
 MD : Multimedia and Digital Convergence
 IB : IoT and Big Data
 CA: Communication System and Applications
 AI : AI and Intelligent Information System

ICFICE 2024 THE 16th INTERNATIONAL CONFERENCE ON FUTURE INFORMATION & COMMUNICATION ENGINEERING			
12th January, 2024, Promenade Hotel Kota Kinabalu, Malaysia			
Technical Session : POSTER	Session AI-C, BI-B Prof. Sung-Wook Kim (Silla University)		
14:00 ~ 14:30 (Grand Ballroom, 1F)	AI-5	AI-6	AI-7
	AI-8	AI-9	AI-10
	AI-11	AI-12	AI-13
	BI-4		
Technical Session : POSTER	Session MD-B, NS-A, UN-A Prof. Hee-Cheol Kim (Inje University) Prof. Dong-Sup Jin (University of Ulsan)		
14:50 ~ 15:20 (Grand Ballroom, 1F)	MD-3	MD-4	MD-5
	MD-6	MD-7	MD-8
	NS-1	NS-2	UN-1
	UN-2		

- * AI : AI and Intelligent Information System
 BI : Biomedical Imaging and Engineering
 MD : Multimedia and Digital Convergence
 NS : Networking and Security
 UN : Ubiquitous Sensor Network

ICFICE 2024 THE 16th INTERNATIONAL CONFERENCE ON FUTURE INFORMATION & COMMUNICATION ENGINEERING	
13th January, 2024, Promenade Hotel Kota Kinabalu, Malaysia	
12:00~13:00 (Restaurant, GF)	Luncheon
Technical Session : ORAL	Session AI-D, IT-C, MD-C Prof. Jong-Tae Lee (Seoul Women's University)
14:00 ~ 15:20 (Grand Ballroom, 1F)	AI-14
	IT-3
	MD-9
	MD-10
Technical Session : ORAL	Session SC-A, AI-E, CA-B Prof. Jong-Tae Lee (Seoul Women's University)
15:30 ~ 16:50 (Grand Ballroom, 1F)	SC-1
	AI-15
	AI-16
	CA-2

* AI : AI and Intelligent Information System
 IT : IT Convergence Technology
 MD : Multimedia and Digital Convergence
 SC : Semiconductor and Communication Services
 CA: Communication System and Applications

ICFICE 2024 THE 16th INTERNATIONAL CONFERENCE ON FUTURE INFORMATION & COMMUNICATION ENGINEERING			
13th January, 2024, Promenade Hotel Kota Kinabalu, Malaysia			
Technical Session : POSTER	Session CA-C, SC-B Prof. Seong-Yoon Shin (Kunsan National University) Prof. MoonSun Shin (Konkuk University)		
14:00 ~ 14:30 (Grand Ballroom, 1F)	CA-3	CA-4	CA-5
	CA-6	CA-7	CA-8
	SC-2	SC-3	
Technical Session : POSTER	Session IT-D, DA-A, AI-F Prof. Dongsik Jo (University of Ulsan)		
14:50 ~ 15:20 (Grand Ballroom, 1F)	IT-4	IT-5	IT-6
	IT-7	IT-8	DA-1
	DA-2	DA-3	AI-17
	AI-18		

* CA: Communication System and Applications
 SC : Semiconductor and Communication Services
 IT : IT Convergence Technology
 DA : Database and Internet Application
 AI : AI and Intelligent Information System

11th January, 2024

Session BI-A : Biomedical Imaging and Engineering

Session AI-A : AI and Intelligent Information System

Session Chair : Prof. DaeHan Ahn
(University of Ulsan)

14:00~15:40

BI-1 : Application of the Orthogonality Sampling Method in Real-World Microwave Imaging

Seongje Chae and Won-Kwang Park (Kookmin University)

AI-1 : Identification of Mixed Foreign Coins Using YOLO Object Detection

Nanda Fanzury, Aria Bisma Wahyutama, Yunsu Kim, Hoon Lee, Mintae Hwang, and Jongwon Seok (Changwon National University)

BI-2 : Image Classification with CNN for Malaria Diagnosis

Md Nayeem Hosen, Shah Muhammad Imtiyaj Uddin, Tagne Poupi Theodore Armand, Joonhyung Im, and Hee-Cheol Kim (Inje University)

BI-3 : Research on Privacy Protection of Medical Data

Young-Bok Cho (Daejeon University)

AI-2 : From Signals to Solutions: A Survey of Stress Detection Using Physiological Signals

Dayal Aakanksha, Khalid Abdul Rehman, and Hee-Cheol Kim (Inje University)

12th January, 2024

Session IT-A : IT Convergence Technology

Session MD-A : Multimedia and Digital Convergence

Session IB-A : IoT and Big Data

Session Chair : Prof. Seong-Yoon Shin
(Kunsan National University)

14:00~15:20

IT-1 : Design of Auto sKORing: An Auto Scoring Application for Foreigners Learning Korean Speaking

Aria Bisma Wahyutama, Yunsu Kim, Mintae Hwang, and Jongwon Seok
(Changwon National University)

MD-1 : The Meta-Analysis on Python-Based Education

Bong Seok Jang¹ and So Hee Yoon²
(¹Mokpo National University, ²Mokpo National Maritime University)

MD-2 : Analysis of the Effects of Flipped Learning in Instructional Technology

Bong Seok Jang¹ and So Hee Yoon²
(¹Mokpo National University, ²Mokpo National Maritime University)

IB-1 : Korean Smart Healthy City Platform Design: Integrating Big-Thick Data with Ethical Considerations

Inyong Jeong, Byeongsu Kim, Jin-Hyun Park, and HwaMin Lee
(Korea University College of Medicine)

Session CA-A : Communication System and Applications

Session AI-B : AI and Intelligent Information System

Session IT-B : IT Convergence Technology

Session Chair : Prof. Dongsik Jo
(University of Ulsan)

15:30~16:50

- CA-1 : A Study on Deep Learning-Based Automatic Recommendation Algorithm of Fashion Lookbook**
Gaeun Lee, Seoyun Yi, and Jong-Tae Lee (Seoul Women's University)
- AI-3 : Leveraging multiple features for robust classification of colorectal cancer using histopathological images**
Tagne Poupi Theodore Armand, Subrata Bhattacharjee, Shah Mahsoom Ali, and Hee-Cheol Kim (Inje University)
- AI-4 : Indoor Positioning by Double Deep Q-Network in VLC based Office Environment**
Sung-Hyun Oh and Jeong-Gon Kim (Tech University of Korea)
- IT-2 : Unsupervised Learning Based CNC Machine Anomaly Detection Using Ensemble Techniques**
Tae-Hyun Kim and Kyo-Hong Jin (Changwon National University)

Session AI-C : AI and Intelligent Information System

Session BI-B : Biomedical Imaging and Engineering

Session Chair : Prof. Sung-Wook Kim
(Silla University)

14:00~14:30

- AI-5 : Identification of PD defects for Power Transformers using Rogowski-Type Sensor**
Sung-Wook Kim (Silla University)
- AI-6 : An Efficient LSTM and GRU based Smart Vessel Trajectory Prediction using AIS Data**
Junaid Khan¹, Umar Zaman¹, Eunkyu Lee^{1,2}, Jaebin Ku¹, Sanha Kim¹, and Kyungsup Kim¹
(¹Chungnam National University, ²Samsung Heavy Industries)
- AI-7 : Prediction of Lithium-Ion Battery EOL Discharge Capacity at the Early Stage**
DaeHan Ahn and Dong-Sup Jin (University of Ulsan)
- AI-8 : Application of mitosis analysis using digital pathology images**
Su-Won Choi, Uddin Shah Muhammad Imtiyaj, Moon-Il Joo, Min Gon Kim, and Hee-Cheol Kim (Inje University)
- AI-9 : Face Pore Detection using the U-net based on Residual Block and Application**

Dongrae Cho¹, Hyun-Du Jeong^{2,3}, Jae Ho Jung^{2,3}, Kwang Jin Lee¹, and Jongin Kim¹
(¹Deepmedi Research Institute of Technology, ²JASAN Institute of Technology,
³HUMEDICAL Institute of Technology)

AI-10 : Alzheimer's Multiclassification Using Explainable AI Techniques
Kamese Jordan Junior, Kouayep Sonia Carole, and Hee-Cheol Kim
(Inje University)

AI-11 : DualKD-Net: Dual Knowledge Distillation for Real-Time Object Detection
Akhrorjon Rakhmonov¹, Taehun Kim², and Jeonghong Kim¹
(¹Kyungpook National University, ²Dipvision Company)

AI-12 : Data collection methodology in smart factory
Yonghoon Kim¹, Kwang Baek Kim¹, and Young-Woon Woo²
(¹Silla University, ²Dong-Eui University)

AI-13 : A research of estimating fish harvest quantity techniques
Yonghoon Kim¹, Kyeongmin Lee¹, and Young-Woon Woo²
(¹Silla University, ²Dong-Eui University)

BI-4 : State of the Art deep Learning Technologies for Breast Cancer Detection and Classification
Shah Mahsoom Ali, Dae Young Kim, Muhammad Umer Ijaz,
and Hee-Cheol Kim (Inje University)

Session MD-B : Multimedia and Digital Convergence

Session NS-A : Networking and Security

Session UN-A : Ubiquitous Sensor Network

Session Chair : Prof. Hee-Cheol Kim
(Inje University)
Prof. Dong-Sup Jin
(University of Ulsan)

14:50~15:20

MD-3 : Virtual Human Teammates for Teaching Guidedance
Bo-hee Kang and Dongsik Jo (University of Ulsan)

MD-4 : Human Facial Datasets based Virtual Pets Landmark Mapping
Donggeun Kim and Dongsik Jo (University of Ulsan)

MD-5 : An Enhanced Post-hurricane Building Damaged Detection

Guangxing Wang¹, Gwanghyun Jo², and Seong-Yoon Shin³
(¹Jiujiang University, ²Hanyang University, ³Kunsan National University)

MD-6 : Efficient Modal Analysis of Vibrating Plates via Compressed DMD

A. Nomin¹, Dai-Hyun Jang², Gwanghyun Jo³, and Seong-Yoon Shin⁴
(¹Ulaanbaatar khot, ²LG Uplus, ³Hanyang University, ⁴Kunsan University)

MD-7 : Recommendation Model with U-Net Architecture for Preference Prediction

DaeHan Ahn and Dongsup Jin (University of Ulsan)

MD-8 : Enhancement of Image-Based Long-Range Facial Recognition Technology for Automatic Attendance Systems

Yejin Lee, Subin Lee, Dongsik Jo, and Daehwan Kim (University of Ulsan)

NS-1 : SPA- and DPA-Resistant Binary Field Elliptic Curve Crypto-processor

Min-Ju Kim, Young-Su Jeong, and Kyung-Wook Shin
(Kumoh National Institute of Technology)

NS-2 : Signal Processing Method and Human Behavior Recognition Technique using Acceleration Sensor

Jeong-Hoon Youn¹, Do-Eun Park², and Teuk-Seob Song²
(¹University of Nebraska Omaha, ²Mokwon University)

UN-1 : A Study on the Machine Learning Skills to Select Minimal Vibration Sensors

Siwoo Byun (Anyang University)

UN-2 : Power-efficient Q-routing for Wireless Sensor Networks

Hyung-Kun Park (KOREATECH)

13th January, 2024

Session AI-D : AI and Intelligent Information System

Session IT-C : IT Convergence Technology

Session MD-C : Multimedia and Digital Convergence

Session Chair : Prof. Jong-Tae Lee
(Seoul Women's University)

14:00~15:20

AI-14 : Intelligent Maritime Navigation: Leveraging AIS Data and Deep Learning for Predictive Vessel Trajectories

Umar Zaman¹, Junaid Khan¹, Jaebin Ku¹, Sanha Kim¹, Eunkyu Lee^{1,2},
and Kyungsup Kim¹
(¹Chungnam National University, ²Samsung Heavy Industries)

IT-3 : Predicting Tool Life Using Machine Learning

Ju-Hyo Hwang and Kyo-Hong Jin (Changwon National University)

MD-9 : Effects of the Artificial Intelligence Education Program on Pre-Service Teachers' AI Literacy and Teacher Efficacy

So Hee Yoon¹ and Bong Seok Jang²
(¹Mokpo National Maritime University, ²Mokpo National University)

MD-10 : Effects of the Jigsaw Model-Based Educational Technology Course on Pre-Service Teachers' Participation and Course Satisfaction

Bong Seok Jang¹ and So Hee Yoon²
(¹Mokpo National University, ²Mokpo National Maritime University)

Session SC-A : Semiconductor and Communication Services

Session AI-E : AI and Intelligent Information System

Session CA-B : Communication System and Applications

Session Chair : Prof. Jong-Tae Lee
(Seoul Women's University)

15:30~16:50

SC-1 : Design and Analysis of High-Aspect Ratio Electromagnetic Bandgap Structure for Power/Ground Noise Suppression

Tae-Soo Park and Myunghoi Kim (Hankyong National University)

AI-15 : Real-Time Detection of Very Small Objects in Water Treatment Plants Using Deep Learning with Image Big Data

Wooseong Yeo, Seoeun Kwak, Sewung Hwang, Min-Soo Jung,
and Meeyoung Park (Kyungnam University)

AI-16 : Survey-Based Evaluation of Open Science Factors in Korea's R&D Ecosystem

Hanna Shmagun¹, Jangsup Shim², Kwangho Chun³, and Kwang-Nam Choi¹
(¹Korea Institute of Science and Technology Information, ²Korea Advanced
Institute of Science and Technology, ³Institute of Information &
Communications Technology Planning & Evaluation)

CA-2 : A Platform for Efficient Fashion E-Commerce for SMEs

Yun Kim, Nahyun Bae, and Jong-Tae Lee (Seoul Women's University)

Session CA-C : Communication System and Applications

Session SC-B : Semiconductor and Communication Services

Session Chair : Prof. Seong-Yoon Shin
(Kunsan National University)

Prof. Moonsun Shin
(Konkuk University)

14:00~14:30

CA-3 : Simple Method for Compensating for Gain Reduction due to the Reduced Ground Plane Size of a Helical Antenna

Duck-Ho Jin, Hyuk-Jin Kwon, and Ji-Hyun Kim (IMS Co. Ltd.)

CA-4 : Development of Voice Command Recognition System in Autonomous Ship Communication by using LLM

Jaebin Ku¹, Junaid Khan¹, Umar Zaman¹, Sanha Kim¹, Eunkyoo Lee^{1,2}, and
Kyungsup Kim¹
(¹Chungnam National University, ²Samsung Heavy Industries)

CA-5 : Freshness Ratio of Information in the Presence of Error

Yutae Lee (Dong-eui University)

CA-6 : Extended Hopping-Pattern Design for Multiple-Access Systems

Jaeyun Jeong, Haeun Kim, and Jin-Ho Chung (University of Ulsan)

- CA-7 : Construction of Unipolar Patterns for Optical networks**
Haeun Kim, Jaeyun Jeong, and Jin-Ho Chung (University of Ulsan)
- CA-8 : BLE-based Positioning Performance Evaluation in Indoor Environment**
Sung-Hyun Oh and Jeong-Gon Kim (Tech University of Korea)
- SC-2 : A Clock Generation System without XTAL and Battery**
Min-Su Kim¹ and Sang-Sun Yoo^{2,3}
(¹Mokpo National University, ²Sungkyunkwan University, ³SKAIChips Co. Ltd.)
- SC-3 : Instruction Fetch and Schedule Unit for RISC-V supporting the Compressed Instructions**
Byoeng-Yoon Choi (Dong-Eui University)

Session IT-D : IT Convergence Technology

Session DA-A : Database and Internet Application

Session AI-F : AI and Intelligent Information System

Session Chair : Prof. Dongsik Jo
(University of Ulsan)

14:50~15:20

- IT-4 : Research on Providing User Profiles for Hyper-Personalized Recommendation Systems**
Sungjung Yong, Hyogyeeong Park, Yeonhwi You, Seoyoung Lee, and Il-Young Moon
(Korea University of Technology and Education)
- IT-5 : A Study on Extracting Climate Factors to Affect Forage Crops Production and Building an Electromagnetic Climate Map**
Moonsun Shin, Taein Kang, Juyeon Kim, Syungyoun Moon, and Gayeon Park
(Konkuk University)
- IT-6 : AI based Smart Monitoring Framework for Livestock Farms**
Moonsun Shin¹, Seonmin Hwang², Kyeongja Jeong³, and Seongwon Lee⁴
(¹Konkuk University, ²Bizforce Co. LTD., ³Chungcheong University, ⁴Chungbuk National University)
- IT-7 : Deep Learning based Preprocessing Technique for Detection of Defect Images from a Line Scan Camera**
Byungchul Kim¹, Seonmin Hwang², Yeonji Kim², Hyeyoung Kim², Ryongdeuk

Jeong², Kyeongja Jeong³, and Moonsun Shin⁴
(¹Baekseok University, ²Bizforce Co. LTD., ³Chungcheong University,
⁴KonKuk University)

IT-8 : Exploring the Encounter and Understand of AI Concepts among Pre-service Teachers

Jeong-Su Yu (Jeonju National University of Education)

DA-1 : Identifying missing concepts in SNOMED CT through similarity analysis of sibling nodes

Wooseok Ryu (Catholic University of Pusan)

DA-2 : Design and Implementation of an Open CV-based Automatic Video Capture System for Video Viewers

Am-Suk Oh (TongMyong University)

DA-3 : A study of the changes in digital policy agendas using text-mining methodologies

Jong-Tae Lee¹ and Dongwon Lee²
(¹Seoul Women's University, ²Hong Kong University of Science and Technology)

AI-17 : Air Pollution Pattern Analysis Combined Vector Slope and K-Means Clustering

Athiruj Poositaporn^{1,2}, Hanmin Jung^{1,2}, and Daesung Lee³
(¹University of Science and Technology, ²Korea Institute of Science and Technology Information, ³Catholic University of Pusan)

AI-18 : Fall Detection in Multi-Persons Using Yolo-Pose and LSTM

Seung Su Jeong¹, Nam Ho Kim², and Yun Seop Yu¹
(¹Hankyong National University, ²Korea Polytechnic University)