



ISSN 2383-8302(Online) Vol.81

KICS Summer Conference 2023

Program

Date June 21(wed.)~24(sat.), 2023

Venue Ramada Plaza Jeju

Organized by

KICS 한국 통신 학 회
The Korean Institute of Communications and Information Sciences

Patrons



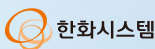
JEJU CVB
제주관광진흥원

해동과학문화재단
haedong foundation

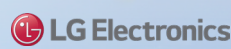
SAMSUNG



LG U+



LIG Nex1



GL associates



ospirent
Promise Assured

NUBICOM
(주)누빅콤



IITP 정보통신기획평가원

C³ 한국클라우드컴퓨팅연구조합
Consortium of Cloud Computing Research





ISSN 2383-8302(Online) Vol.81

KICS Summer Conference 2023

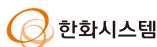
Program

Date June 21(wed.)~24(sat.), 2023

Venue Ramada Plaza Jeju

Organized by  **KICS 한국통신학회**
The Korean Institute of Communications and Information Sciences

Patrons



The Korean Institute of
Communications and
Information Sciences

Table of Contents

4	Message from the Chairs
5	Committees
6	Registration
8	Session Room Location
9	Program at a Glance
12	Oral Sessions
16	Poster Sessions
18	Transportation

Message from the Chairs



Greetings! I am Professor Hong, Een-Kee, the president of the Korean Information and Communications Society. The Korean Information and Communications Society is the largest academic society in Korea that plays a leading role in the academic/industrial fields of ICT. The KICS Summer Conference is the representative academic event of the Korean Information and Communications Society, where the latest research trends and technological innovations in the ICT field are shared every year. This year, We are very happy to meet you all in person at the Ramada Plaza Jeju Hotel in Jeju City from June 21st to 24th.

At this summer conference, there will be a keynote speech by Hannes Ekström, CEO of Ericsson-LG, a Haedong special lecture by Professor Vincent Chan of MIT, online invited lectures by Tommaso Melodia (Northeastern Univ.) and Mehdi Bennis (Oulu Univ.). In addition, we have prepared various programs such as tutorials, ITRC/research society/government organization special sessions, defense ICT special session, Hanwha Systems special session, STEAM project outcome sharing sessions by the National Research Foundation, IITP PM special session, and special lectures by industry experts. There are too many to list, but I am confident that it will be a place for a wide range of information exchange. Especially this year, we will hold an industry-academia-research exchange meeting for the first time on Friday and Saturday. The industry-academia-research exchange meeting will be a good opportunity for researchers and companies in the ICT field to cooperate and communicate with each other, and I ask for your interest and participation from industry-academia-researchers.

I have no doubt that this summer conference will be a passionate place where professors, students, companies, research institutes, and government officials related to the ICT field can all participate to discuss/cooperate/exchange various ideas. Finally, I would like to thank the conference operation committee and secretariat staffs who helped prepare this event, and wish you all good health and luck. Thank you.

June 2023

President of KICS **Een-Kee Hong**

Summer Conference 2023 Committee Chairs



Jae-Hyun Kim
Organizing
Committee Chair



Sunwoo Kim
Technical Program
Committee Chair



Moon-Sik Lee
Technical Program
Committee Chair



Junsu Kim
Technical Program
Committee Chair

Committees

General Chair Een-Kee Hong(President of KICS, Kyung Hee Univ.)

Organizing / Technical Program Committee

Chair

Jae-Hyun Kim(Ajou Univ.)

Vice-Chairs

Sunwoo Kim(Hanyang Univ.)

Junsu Kim(Tech Univ. of Korea)

Moon-Sik Lee(ETRI)

Members

Songnam Hong(Hanyang Univ.)

Jihyung Kim(ETRI)

Seong Ho Chae(Tech Univ. of Korea)

Wonjae Shin(Ajou Univ.)

Jeonghun Park(Yonsei Univ.)

Dongwan Kim(Dong-A Univ.)

Soyi Jung(Ajou Univ.)

Jiheon Kang(Duksung Women's Univ.)

Jung Hoon Lee(HUFS)

Woongsoo Na(Kongju National Univ.)

Daeyoung Park(Inha Univ.)

Haejoon Jung(Kyung Hee Univ.)

JungSook Bae(ETRI)

Jaeho Lee(Duksung Women's Univ.)

Namyoon Lee(Korea Univ.)

Jinseok Choi(KAIST)

YoungHee KIM(NIA)

Hoondong Noh(ETRI)

Minchae Jung(Sejong Univ.)

Hyosu Kim(Chung-Ang Univ.)

Hyowoon Seo(Kwangwoon Univ.)

Duk Kyung Kim(Inha Univ.)

Su Min Kim(Tech Univ. of Korea)

Bang Inkyu(Hanbat National Univ.)

Special Program Committee

Members

Sungtek Kahng(Incheon National Univ.)

KIM GYOUNGBAE(Seowon Univ.)

Sunwoo Kim(Hanyang Univ.)

KIM SUNG-HOON(ETRI)

YoungHee Kim(NIA)

Kim Jae-Hyun(Ajou Univ.)

Hyungkee Kim(Hanwha Systems)

Park, Hyungwon(LIG Nex1)

Song Hong-Yeop(Yonsei Univ.)

Oh-Soon Shin(Soongsil Univ.)

Heung-Ryeol You(KT)

Myungsu Lee(KIAP)

Moon-Sik Lee(ETRI)

LEE IL WOO(ETRI)

KyungHi Chang(Inha Univ.)

WOOSUNG JUNG(ETRI)

Jo bonggyun(KIAP)

Choi, Mi-Jung(Kangwon National Univ.)

Jun Heo(Korea Univ.)

Young-Chai Ko(Korea Univ.)

Kikeun Kim(ADD)

Seong-Lyun Kim(Yonsei Univ.)

Younghoon Kim(TTA)

KIM YONGSUNG(IITP)

Kim chung sup(ETRI)

Daeyoung Park(Inha Univ.)

SONG YUNJEONG(ETRI)

Seokjoo Shin(Chosun Univ.)

OHDONGHA(Consortium of Cloud Computing Research)

Kyunghan Lee(Seoul National Univ.)

MEONGHUN LEE(Sunchon National Univ.)

Yonghee Lee(SAMSUNG ELECTRONICS)

Jae-Min Lee(Kumoh National Institute of Technology)

MinWook Jang(TTA)

Haejoon Jung(Kyung Hee Univ.)

Sungrae Cho(Chung-Ang Univ.)

Dong Seog HAN(Kyungpook National Univ.)

Hwang YouChul(TTA)

Registration

■ Registration Fee(KRW)

Registration		Early Birds	On-Site	Note
Member	Student	220,000	270,000	Banquet coupon is not included
	Regular/Life	300,000	340,000	
Non-member	Student	250,000	300,000	Banquet coupon is not included
	Regular	360,000	400,000	
Undergraduate Student		100,000	120,000	Banquet coupon is not included
Tutorial Registration		Same as conference registration		

■ Registration Policy

1. To be published in the KICS Summer Conference 2023 Proceedings(Available for download : ~August 31), a minimum of one author from each accepted paper MUST register and be a KICS member, and the paper must be presented at the conference.
2. A valid student ID is required at the registration desk to check the eligibility for student-rate registration.
3. Registrations include access to conference sessions, a program book, souvenirs, a luncheon(June 22, 23), Banquet(June 22) and coffee breaks.(Student, Undergraduate Student : Reception coupon is not included)
4. Non-refundable author registration fees must be paid prior to the early registration due.
5. For non-author registrations, absolutely no cancellations/refunds will be accepted after the early registration due.

Registration

■ Method of Payment

Card	· Visa, Master, and JCB are available to use for online registration. · Payment by credit card is available through the online procedure. · All service charges on credit card are to be paid by registrants. · Actual debit amount is subject to change according the exchange rate.														
Bank Transfer	· All bank remittance charges are to be paid by registrants. · Sender's name should be the registrant's name. <table> <tr> <td>Bank Name</td><td>WOORI BANK</td></tr> <tr> <td>Account No.</td><td>192-05-027627</td></tr> <tr> <td>Swift Code</td><td>HVBKCRSE</td></tr> <tr> <td>Bank Address</td><td>1-203, Hoehyeon-dong, Jung-gu, Seoul, Korea</td></tr> <tr> <td>Beneficiary</td><td>Korea Information and Communications Society(KICS)</td></tr> <tr> <td>Beneficiary Address</td><td>#06296, 3F, 32-3, Nonhyeon-ro 38-gil, Gangnam-gu, Seoul, Republic of Korea</td></tr> <tr> <td>Beneficiary TEL</td><td>-8928</td></tr> </table>	Bank Name	WOORI BANK	Account No.	192-05-027627	Swift Code	HVBKCRSE	Bank Address	1-203, Hoehyeon-dong, Jung-gu, Seoul, Korea	Beneficiary	Korea Information and Communications Society(KICS)	Beneficiary Address	#06296, 3F, 32-3, Nonhyeon-ro 38-gil, Gangnam-gu, Seoul, Republic of Korea	Beneficiary TEL	-8928
Bank Name	WOORI BANK														
Account No.	192-05-027627														
Swift Code	HVBKCRSE														
Bank Address	1-203, Hoehyeon-dong, Jung-gu, Seoul, Korea														
Beneficiary	Korea Information and Communications Society(KICS)														
Beneficiary Address	#06296, 3F, 32-3, Nonhyeon-ro 38-gil, Gangnam-gu, Seoul, Republic of Korea														
Beneficiary TEL	-8928														

■ Refund Policy

- If you have already registered for KICS Summer Conference 2023 and find that you are unable to attend or cancel the paper, please notify KICS Summer Conference 2023 secretariat in writing to conf2@kics.or.kr to request a refund and cancel your registration.
- Refund will be made upon receipt of this written notice after the conference.
- All bank service charges are to be paid by the registrant.
- No cancellations/refunds will be accepted after the early registration due.
- If you have any questions, please contact Registration Secretariat of KICS Summer Conference 2023 at conf2@kics.or.kr.

KICS Summer Conference 2023 Proceedings ISSN Number

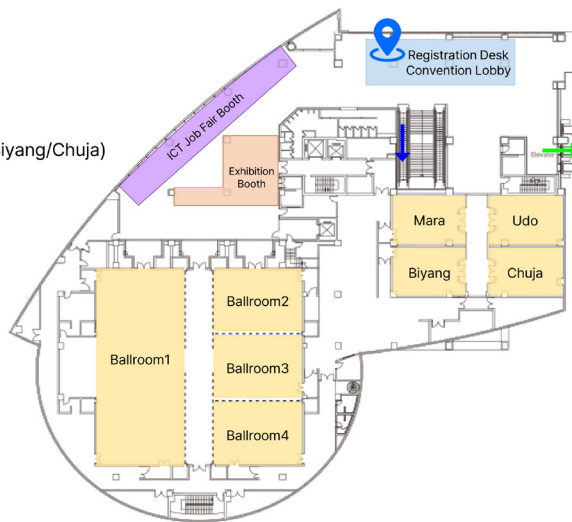
ISSN: 2383-8302(Online) Vol.81

Session Room Location

※ Conference Venue : Ramada Plaza Jeju

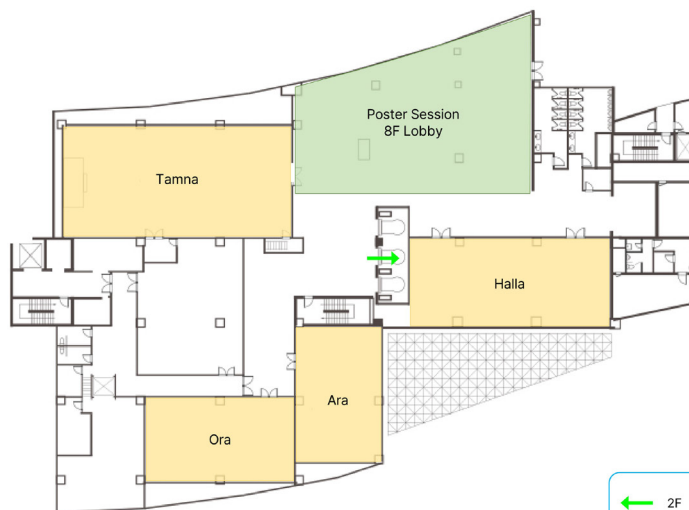
2F

- Registration Desk
- Oral Session
(Ballroom1-4/Mara/Udo/Biyang/Chuja)
- ICT Job Fair Booth
- Exhibition Booth



8F

- Oral Session
(Ora/Ara/Halla/Tamna)
- Poster Session



Program at a Glance

June 21(Wed.)

Ramada Plaza Jeju 2F, 8F

Venue	Oral Session, 8F				Oral Session, 2F								Poster Session
	Ora	Ara	Halla	Tamna	Mara	Udo	Biyang	Chuja	Ballroom 4	Ballroom 3	Ballroom 2	Ballroom 1	Lobby, 8F
Time													
12:00 ~17:00	Registration(Convention Lobby, 2F)												
13:00 ~14:40 (100min)	1A	2A	3A	4A	5A	6A	7A	8A	9A	10A	11A	12A	13A-P
	Special Session	Special Session	Korean Paper Session	Korean Paper Session	Korean Paper Session	Special Session	Special Session	Special Session	Special Session	Korean Paper Session	Special Session	Special Session (Industry)	Korean Paper Session (Undergraduate Student Paper) (13:00-14:10)
3B			4B	5B	6B	7B	8B	9B	10B	11B	13B-P		
Korean Paper Session			Workshop (closed)	Korean Paper Session	Special Session	Special Session	Special Session	Special Session	Korean Paper Session	Haedong Best Paper Award	Undergraduate Student Paper Awards (17:00)		
3C				5C	6C	7C	8C	9C	10C	11C		12C	
Korean Paper Session				Special Session	Special Session	Special Session	Special Session	Special Session	Korean Paper Session	Korean Paper Session	Korean Paper Session		
14:50 ~16:30 (100min)													
16:40 ~18:20 (100min)													

Program at a Glance

June 22(Thur.)

Ramada Plaza Jeju 2F, 8F

Venue	Oral Session, 8F				Oral Session, 2F								Poster Session
	Ora	Ara	Halla	Tamna	Mara	Udo	Biyang	Chuja	Ballroom 4	Ballroom 3	Ballroom 2	Ballroom 1	Lobby, 8F
08:00 ~17:00	Registration(Convention Lobby, 2F)												
08:30 ~09:40 (70min)	14A	15A	16A	17A	18A	19A	20A	21A	22A	23A	24A	25A	26A-P
09:50 ~11:00 (70min)	Special Session	Korean Paper Session	Korean Paper Session	Special Session	Korean Paper Session	Korean Paper Session	Special Session	Korean Paper Session	Special Session	Korean Paper Session	Special Session (09:00-12:00)	Special Session (Tutorial 1) (08:30-11:10)	Korean Paper Session
		15B	16B		18B	19B	20B	21B		23B			26B-P
		Special Session	Korean Paper Session		Korean Paper Session	Korean Paper Session	Special Session	Korean Paper Session		Korean Paper Session			Korean Paper Session
11:10 ~12:20 (70min)		15C	16C		18C	19C	20C	21C		23C			26C-P
		Special Session	Korean Paper Session		Korean Paper Session	Korean Paper Session	Special Session	Special Session		Special Session			Korean Paper Session
12:20 ~13:40 (80min)	Lunch Break(Tammora, 1F)												
13:40 ~14:50 (70min)	14D	15D	16D	17D	18D	19D	20D	21D	22D	23D	24D	25D	26D-P
15:00 ~16:10 (70min)	Special Session	Special Session	Special Session	Special Session	Korean Paper Session	Workshop (closed)		Special Session	Special Session	Special Session	Special Session (IITP PM) (13:20-16:30)	Special Session (Distinguished International Scholars)	Korean Paper Session
	14E				18E	19E	20E	21E	22E	23E			26E-P
16:20 ~17:30 (70min)	Special Session				Special Session	Korean Paper Session		Special Session	Special Session	Korean Paper Session			Korean Paper Session
					18F	19F	20F	21F					
					Special Session	Workshop (closed)	Special Session	Special Session					
17:50 ~20:00 (130min)	Keynote Speech & Banquet(Ramada Ballroom, 2F) 17:50~18:30 Keynote Speech "Climate Change Actions and Evolution of Mobile Communications Network" – Hannes Ekström(President and CEO of Ericsson-LG) 18:30-20:00 Opening Ceremony, Best Paper Award and Banquet												

Program at a Glance

June 23(Fri.)

Ramada Plaza Jeju 2F, 8F

Venue Time	Oral Session, 8F				Oral Session, 2F								Poster Session			
	Ora	Ara	Halla	Tamna	Mara	Udo	Biyang	Chuja	Ballroom 4	Ballroom 3	Ballroom 2	Ballroom 1	Lobby, 8F			
08:00 ~16:00	Registration(Convention Lobby, 2F)															
08:30 ~09:40 (70min)	27A	28A	29A	30A	31A	32A	33A	34A	35A	36A	37A	38A	39A-P			
	Special Session	Special Session	Special Session	Special Session	English Paper Session 1 Chair: Junghyun Kim (Sejong Univ.)	Special Session	Special Session	Special Session	Korean Paper Session	Korean Paper Session	Special Session (Venture Story) (08:30-11:50)	Special Session	Special Session			
09:50 ~11:00 (70min)	27B	28B	29B	30B	31B	32B	33B	34B	35B	36B						
11:10 ~12:20 (70min)	Special Session	Special Session	Special Session	Special Session	English Paper Session 2 Chair: Jeonghun Park (Yonsei Univ.)	Special Session	Special Session	Special Session	Korean Paper Session	Korean Paper Session						
	27C	28C	29C	30C	31C	32C	33C	34C	35C	36C						
12:20 ~13:40 (80min)	Special Session	Special Session	Special Session	Special Session	English Paper Session 3 Chair: Namyeon Lee (Korea Univ.)	Special Session	Korean Paper Session	Korean Paper Session	Korean Paper Session	Korean Paper Session						
	Lunch Break(Tammora, 1F)															
13:40 ~14:50 (70min)	27D	28D	29D	30D	31D	32D	33D	34D	35D	36D	37D	38D	39D-P			
	Special Session	Special Session		Special Session	English Paper Session 4 Chair: Seo jung woo (ICT Polytech Institute of Korea)		Korean Paper Session	Special Session	Special Session	Special Session	Special Session (Tutorial 2) (13:40-15:40)	Korean Paper Session	Korean Paper Session			
15:00 ~16:10 (70min)	27E	28E	29E	30E	31E	32E	33E	34E		36E						
16:20 ~17:30 (70min)	Special Session	Special Session	Workshop (closed)		English Paper Session 5 Chair: Chan-won Park (ETRI)	Special Session	Special Session	Special Session						Korean Paper Session	Special Session (Young Researcher) (13:40-17:45)	Workshop (closed)
	27F	28F		30F	31F	32F	33F	34F	36F	Korean Paper Session	38F	39F-P				
	Korean Paper Session	Special Session			English Paper Session 6 Chair: Namseok Ko (ETRI)	Special Session	Workshop (closed)	Special Session		Korean Paper Session						

June 24(Sat.)

Time	Session
09:00~14:40	Industrial-Academic-Research Society

Oral Sessions June 23 (Friday)

31A English Paper 1

June 23(Fri.) 08:30~09:40(70min), Mara, 2F

Chair: Junghyun Kim(Sejong Univ.)

- 31A-1 **Convolutional Autoencoder for Image Quality Assessment**
Ijaz Ahmad, Seokjoo Shin(Chosun University)
- 31A-2 **Unveiling Hidden Vulnerabilities: Similar Vulnerability Detection Using a Gradient Boosting Decision Tree**
Jiashun Hao, 권영우(Kyungpook National University)
- 31A-3 **Green Vehicle Routing Problem using GNNS for Vehicle Tracking System**
Ramdhan Nugraha, 신수용(Kumoh National Institute of Technology)
- 31A-4 **Federated Learning Empowered Spam Message Detection for Multilingual Short Message Service (SMS)**
Md Javed Ahmed Shanto, Esmot Ara Tuli, *Rubina Akter, Dong-Seong Kim, Taesoo Jun(Kumoh National Institute of Technology, *ICT-CRC)
- 31A-5 **Aggregate Energy Demand Forecasting for Buildings Using Continuous Wavelet Transform (CWT) and Transformers**
Azimbek Khudoyberdiev, Jihoon Ryoo(State University of New York, Korea)
- 31A-6 **Enhancing Liver Disease Prediction using Machine Learning Models: A Comparative Study of Oversampled and Synthetic Data Approaches**
Shubhangi Saileja R. Garnaik, Jihoon Ryoo(State University of New York, Korea)
- 31A-7 **PE Header-Based Multinomial Malware Classification Using ML for Computing Systems**
Md Raihan Subhan, Rubina Akter, Dong-Seong Kim, Taesoo Jun(Kumoh National Institute of Technology)
- 31A-8 **An image colorization method using a transformer**
Hamza Shafiq, Bumshik Lee(Chosun University)
- 31A-9 **Autoencoder-Based binary mask segmentation for Masked Faces**
Mohamed Mahmoud, Kang Hyun Soo(Chungbuk National University)

31B English Paper 2

June 23(Fri.) 09:50~11:00(70min), Mara, 2F

Chair: Jeonghun Park(Yonsei Univ.)

- 31B-1 **UxV-based IoT Data Collection and Storage Management System using Blockchain**
Md Masuduzzaman, Syed Muhammad Raza, Soo Young Shin(Kumoh National Institute of Technology)
- 31B-2 **X선 영상에 대한 Generative Adversarial Networks를 이용한 RGB와 Grayscale 합성 비교 연구**
yagoub bile(Chungbuk National University)
- 31B-3 **Advances in Tooth Detection and Segmentation in Dental Panoramic X-ray Images: A Review**
Shaily Bajpai, Bumshik Lee(Chosun University)
- 31B-4 **Enhancing Energy Demand Estimation for Buildings using CWT and Transformers**
Azimbek Khudoyberdiev, Jihoon Ryoo(State University of New York, Korea)

Oral Sessions June 23 (Friday)

- 31B-5 **A Survey on Device-Free Approaches in HAR: Data Modularities and Application**
Md Shafiqul Islam, M. Humayun Kabir, 신원재(Ajou University)
- 31B-6 **A Survey on Deoldifying Old Photos and Videos**
Aradhana Mishra, Bumshik Lee(Chosun University)
- 31B-7 **Towards Implementation of AI-enhanced Predictive Digital Twin on AI Chips**
Hoa Tran-Dang, Dong-Seong Kim(Kumoh National Institute of Technology)
- 31B-8 **UAV-Based B5G Networks: Blockchain and Federated Learning Technology**
Rubina Akter, *Ahmad Zainudin, *Dong-Seong Kim(ICT-CRC, *Kumoh National Institute of Technology)

31C English Paper 3

June 23(Fri.) 11:10~12:20(70min), Mara, 2F

Chair: Namyoon Lee(Korea Univ.)

- 31C-1 **Hybrid Transceiver for Multi-Relay MIMO Systems**
Zunira Abbasi, Hafiz Muhammad Tahir Mustafa, Hyoung-kyu Song(Sejong University)
- 31C-2 **Enhancing Obstacle Avoidance System using 3D Lidar Sensing for Unmanned Aerial Vehicle (UAV)**
Ryan Febriansyah, Silvianti, Krisma Asmoro, Soo Young Shin(Kumoh National Institute of Technology)
- 31C-3 **Analysis of the In-Memory Checkpointing Approach in Apache Flink**
백민석, C. Sergio Paulo, 오상윤(Ajou University)
- 31C-4 **Graph Neural Network Based Node Classification in Internet of Things Network**
Mohammad Abrar Shakil Sejan, Md Habibur Rahman, Md Abdul Aziz, Jung-In Baik, Hyoung-Kyu Song(Sejong University)
- 31C-5 **Deep Learning Model Based Spectral Efficiency Measurement Under Wiener Filter in Multi-user IRS-Assisted Communication System**
Md Abdul Aziz, Md Habibur Rahman, Mohammad Abrar Shakil Sejan, Hyoung-Kyu Song(Sejong University)
- 31C-6 **A Semi-Centralized Layer 2 Blockchain Architecture**
Amaizu Gabriel, *Ikechi Saviour, Lee Jae-Min, Kim Dong-Seong(Kumoh National Institute of Technology, *ICT-CRC)
- 31C-7 **Batch Minting-enabled Digital Certificates Based on Soulbound Token for Achievement Verification**
Muhammad Rasyid Redha Ansori, Allwinnaldo, Revin Naufal Alief, *Ikechi Saviour Igboanusi, Jae-Min Lee, Dong-Seong Kim(Kumoh National Institute of Technology)
- 31C-8 **Advance NFT-Based Digital Certificate for Efficient Exotic Fish Ownership**
Allwinnaldo, Muhammad Rasyid Redha Ansori, Revin Naufal Alief, Ikechi Saviour Igboanusi, Jae Min Lee, Dong-Seong Kim(Kumoh National Institute of Technology)

Oral Sessions June 23 (Friday)

31D English Paper 4

June 23(Fri.) 13:40~14:50(70min), Mara, 2F

Chair: Seo jung woo(ICT Polytech Institute of Korea)

- 31D-1 **A Reinforcement Learning based Clustering in Wireless Sensor Network**
YAN CHENGLONG,DENG YAFENG,최영준(Ajou University)
- 31D-2 **Design of Decentralized Peer-to-Peer Energy Market Based on ADMM Algorithm with Nonlinear Function of User's Preferences**
Hien Thanh Doan(Sogang University)
- 31D-3 **Deep Q-learning-based Task Offloading and Resource Allocation in Multi-access Edge Computing enabled UAV Networks**
Shathee Akter,Seokhoon Yoon(University of Ulsan)
- 31D-4 **Comparative analysis of Anchor-free Object Detection Algorithms using Scalable Dataset**
Muhammad Imad,신수용(Kumoh National Institute of Technology)
- 31D-5 **Optimized Local Positioning in Fast and Safe Trajectory UAV Using Stereo Camera with 1D Lidar Sensor**
WICAKSONO MUHAMMAD,신수용(Kumoh National Institute of Technology)
- 31D-6 **Evaluation of Federated Aggregating Algorithms for Intrusion Detection in UAV Networks**
Vivian Ukamaka Ihekoronye,Cosmas Ifeanyi Nwakanma,Dong-Seong Kim,Jae Min Lee(Kumoh National Institute of Technology)
- 31D-7 **Explainable Metaverse Ransomware Detection using SHAP**
Ebuka Chinaecheam Nkoro,Judith Nkechinyere Njoku,Cosmas Ifeanyi Nwakanma,Jae-Min Lee,Dong-Seong Kim(Kumoh National Institute of Technology)
- 31D-8 **MediaPipe-based Real-time Dynamic Avatar Formation for Metaverse**
Esmot Ara Tuli,Ahmad Zainudin,Md Javed Ahmed Shanto,Jae Min Lee,Dong-Seong Kim(Kumoh National Institute of Technology)

31E English Paper 5

June 23(Fri.) 15:00~16:10(70min), Mara, 2F

Chair: Chan-won Park(ETRI)

- 31E-1 **1-bit Dual-Band Active Reflective Metasurface design for RIS Applications**
Dilaawaiz Fazal,홍익표(Kongju National University)
- 31E-2 **Design of Unit Cell of Reconfigurable Intelligence Surface with Integrated Sensing Capability**
Biswarup Rana,조성실,홍익표(Kongju National University)
- 31E-3 **Effect of Mutual Coupling and Inter element Distance on the Generation of OAM Beams using Uniform Rectangular Array**
TARIQ ADNAN,*Hye Yeong Lee,SHIN SOO YOUNG(Kumoh National Institute of Technology)
- 31E-4 **Capacity Analysis of FANETs Employing NOMA and OMA**
Syed Muhammad Ali Hashmi,Soo Young Shin(Kumoh National Institute of Technology)

Oral Sessions June 23 (Friday)

- 31E-5 **A Comparative Performance Analysis of OCDM and OFDM for Wireless Communications**
MUNEEB AHMAD, Soo Yong Shin(Kumoh National Institute of Technology)
- 31E-6 **Performance Analysis of Indoor Localization Algorithm with Radio Stripes Network in Cell Free MIMO Environment**
Paulson Eberechukwu Numan, Jeongwan Kang, *김선우(Hanyang University)
- 31E-7 **IMU based Smart Fish Feeding System with Fish-Feeding Behavior Estimation**
Akbar Taufiqurrahman, 신수용(Kumoh National Institute of Technology)
- 31E-8 **Chest X-ray image super-resolution enhanced the ELU function with channel attention**
Khishigdelger Anudari, Hyung Soo Kang, Ahmed Salem(Chungbuk National University)

31F English Paper 6

June 23(Fri.) 16:20~17:30(70min), Mara, 2F

Chair: Namseok Ko(ETRI)

- 31F-1 **An efficient hybrid precoding with low complexity in mm-wave massive MIMO systems**
Rao Muhammad Asif, 신수용(Kumoh National Institute of Technology)
- 31F-2 **Index Modulation aided Spectral Efficient Frequency Division Multiplexing for Non-Orthogonal Multiple Access System**
Mohammed Shahriar Kamal, 신수용(Kumoh National Institute of Technology)
- 31F-3 **Short Review of Quantum Key Distribution for Secured Wireless Communications**
Silvirianti, 신수용(Kumoh National Institute of Technology)
- 31F-4 **RIS Precoding for Uplink Communication**
Krisma Asmoro, Soo Young Shin(Kumoh National Institute of Technology)
- 31F-5 **ISAC-based UAV-Assisted Wireless Network: A Resource Allocation Problem**
IGBAFE ORIKUMHI, *Jungsook Bae, 김선우(Hanyang University, *Electronics and Telecommunications Research Institute)
- 31F-6 **STAR vs. Active RIS : Capacity Comparison**
Nadhira Azizah Suwanda, Hye Yeong Lee, Soo Young Shin(Kumoh National Institute of Technology)
- 31F-7 **STAR-RIS-Assisted Wireless Communications in Downlink NOMA Networks**
Waqas Khalid, Heejung Yu, *Ridho Hendra Yoga Perdana, *Beongku An(Korea University Sejong Campus, *Hongik University)
- 31F-8 **A Survey on Wireless Technologies in Indoor Applications for Resource-Limited Devices**
Md. Ali Hasan, M. Humayun Kabir, Wonjae Shin(Ajou University)

Poster Sessions June 23 (Friday)

39F-P English Paper 7

June 23(Fri.) 16:20~17:30(70min), Lobby, 8F Chairs: Sangmi Moon(Korea Nazarene Univ.), Woo Yong Lee(ETRI)

- 39F-P-1 **Color Correction for Underwater Image Restoration**
Hafiz Shakeel Ahmad Awan,Khurram Ashfaq,Sana Munir Khan,Muhammad Tariq Mahmood(Korea University of Technology and Education)
- 39F-P-2 **Calibrating Deep Learning Model for Medical AI Applications with Imbalanced Data**
이규석,유환조(Pohang University of Science and Technology)
- 39F-P-3 **An Energy-Efficient Offloading Scheme for Multi-access Edge Computing Assisted by Parked Vehicles**
Xuan-Qui Pham,Dong-Seong Kim(ICT-CRC)
- 39F-P-4 **Deep Dive into Adaptive Video Streaming**
최완규,윤종원(Hanyang University)
- 39F-P-5 **GAN-Based Style Transfer for Visual Clarity in Driving Simulations employing Deep Q-Learning**
강제이,김종원(Gwangju Institute of Science and Technology)
- 39F-P-6 **Tri-mode Index Modulated Spectral Efficient Frequency Division Multiplexing for 6G Networks**
Muhammad Sajid Sarwar,Soo Young Shin(Kumoh National Institute of Technology)
- 39F-P-7 **YouTube viewers' virtual experience of Hanbok culture : An exploratory study using Big Data analysis**
이정순,이하경(Chungnam National University)
- 39F-P-8 **Verifying the Stability of Tree Algorithms on Complex Industrial Internet of Things Dataset**
AHAKONYE LOVE ALLEN CHIJIJOKE,COSMAS IFEANYI NWAKANMA,Jae Min Lee,Dong Seong Kim(Kumoh National Institute of Technology)
- 39F-P-9 **Improvement to Dormant Validators in Private Ethereum IoT Blockchain Network**
Goodness Oluchi Anyanwu,Ikechi Saviour Igboanusi,*Dong-Seong Kim(ICT-CRC,*Kumoh National Institute of Technology)
- 39F-P-10 **A Study on the Quality Satisfaction Analysis of Non-face-to-face Learning System Software - Targeting e-Learning System Users**
채봉수,강건희,공준익,이진규,황제민,신정원,*이한진(Telecommunications Technology Association,*Handong Global University)
- 39F-P-11 **Resource Allocation Strategies in Mobile Edge Computing Systems for Improving Task-Completion Latency**
Emmanuella Adu,SangGi Park,Inkyu Bang,Taehoon Kim(Hanbat National University)
- 39F-P-12 **Towards Anomaly Detection in Virtual Reality Wireless Networks**
Urslila Uchechi Izuazu,Cosmas Ifeanyi Nwakanma,Dong-Seong Kim,Jae-Min Lee(Kumoh National Institute of Technology)
- 39F-P-13 **An eBPF/XDP-based DevSecOps Approach for Securing Kubernetes Cluster from Cyber-Attacks**
Ulugbek Khamdamov,JongWon Kim(Gwangju Institute of Science and Technology)

Poster Sessions June 23 (Friday)

39F-P-14 Explainable Activity Detection and Classification: SHAP vs LIME

Cosmas Ifeanyi Nwakanma, Ebuka Chinaechem Nkoro, Love Allen Chijioke Ahakonye, Goodness Oluchi Anyanwu, Judith Nkechinyere Njoku, Dong-Seong Kim (Kumoh National Institute of Technology)

39F-P-15 Data Visualization for Digital Twin-based BMS using Unreal Engine

Robin Matthew Medina, Judith Nkechinyere Njoku, Paul Michael Custodio, Cosmas Ifeanyi Nwakanma, Jae-Min Lee, Dong-Seong Kim (Kumoh National Institute of Technology)

39F-P-16 Data-Driven Battery Digital Twin in Unreal Engine

PAUL MICHAEL CUSTODIO, ROBIN MATTHEW MEDINA, JUDITH NKECHINYERE NJOKU, 김동성, 이재민, Cosmas Ifeanyi Nwakanma (Kumoh National Institute of Technology)

39F-P-17 Comparison Between Vision Transformer and CNN for Image Classification

Mst Ayesha Khatun 1, Dong-Seong Kim, Jae-Min Lee (Kumoh National Institute of Technology)

39F-P-18 Metaverse and Digital Twin for Battery Management Systems using MATLAB and Unreal Engine

Judith Nkechinyere Njoku, Ebuka Chinaechem Nkoro, Robin Matthew Medina, Paul Michael Custodio, *Cosmas Ifeanyi Nwakanma, Jae-Min Lee, Dong-Seong Kim (Kumoh National Institute of Technology, *ICT-CRC)

39F-P-19 Streamlining Healthcare with NLP and AI: Extracting Medical Information from Unstructured Text and Linking of Medical Codes

Raghavendra Ganiga, Youngwoo Oh, Wooyeol Choi (Chosun University)

39F-P-20 Design and Implementation of Lightweight, Scalable, and Secure REST APIs for Seamless Integration with Hospital ICT Infrastructure

Raghavendra Ganiga, Youngwoo Oh, Wooyeol Choi (Chosun University)

39F-P-21 IoT-Assisted and Cloud Computing Orchestrated Room Temperature Control System for Smart Home

Odinachi U. Nwankwo, Simeon Okechukwu Ajakwe, Cosmas Ifeanyi Nwakanma, Dong-Seong Kim, Jae-Min Lee (Kumoh National Institute of Technology)

39F-P-22 Application of Interpolation-based Road Region Detection Method on Real Radar Dataset

Sheriff Murtala, Soojung Hur, Yongwan Park (Yeungnam University)

39F-P-23 Energy Consumption Optimization in Mobile Edge Computing Federation based Deep Reinforcement Learning

무이흐영도, 유명식 (Soongsil University)

39F-P-24 Shape Aware for 3D Object Detection using LiDAR Point Cloud

안히엠후앙, 유명식 (Soongsil University)

39F-P-25 Deep Learning-based Approaches for Nucleus Segmentation

부이두이콩, 유명식 (Soongsil University)

Transportation

※ Ramada Plaza Jeju(Conference Venue)

- Address : 66 Tapdong-ro, Samdo 2-dong, Jeju-si, Jeju-do
- Tel : +82-64-729-8100
- ramadajeju@ramadajeju.co.kr
- Homepage : www.ramadajeju.co.kr

[Departure from jeju international airport]



- Total of 3.8km
- 10 minutes
- To Yongmun rotary → Hancheon Bridge → Seomun Market → Turn left at Seomun Sageori (four-way intersection) → Go straight to Tapdong-ro

MEMO

MEMO

E n a b l i n g P o s s i b i l i t y

다른 산업의 혁신을 리딩하는 Digital Transformation Enabler & Partner

KT Enterprise가
앞선 디지털 기술과 기업 유무선 통신의 전문성으로
대한민국 기업의 디지털 혁신을 이끌어 갑니다.



KT Enterprise
enterprise.kt.com

문의처
1588-0114

kt Enterprise



초연결·초지능·초융합의 기술

한화시스템으로 이어집니다

국가와 국민의 안전을 위해
육·해·공·우주를 아우르는
한화시스템의 노력

당신을 위한 첨단 기술로
대한민국의 일상을 지킵니다



한국형 차기구축함 전투체계

센서, 무장, 항해, 전술통신 통합 운용을 위한
핵심 무기체계 개발



Middle-range MFR

탐지·추적 성능 및 운용성을 강화한
능동위상배열 다기능레이다



도심 항공 모빌리티

저소음·고효율의 기체, 서비스,
인프라 등 UAM 토달 솔루션 제공



초소형 SAR 위성

관심지역 준 실시간 감시를 위한
군집형 초소형 SAR 위성 체계 개발 진행

마침내 모여,
우리 군 최초의 사이버전 무기체계가 된다.

전장의 데이터와 이를 분석하는 통찰력, 그리고 AI 기법까지
사이버 작전을 위한 모든 준비는 끝났습니다.

그 시작부터 모든 순간을 함께한 LIG넥스원이
최상의 사이버전장관리체계를 보여드립니다.

LIG Nex1

Life Sensation

청정에 스마트를 더한 시기술로
아무것도 하지 않고 모든 것을 하는 삶



*휘센이 지향하는 삶에 대한 연출된 표현으로, 각 동작을 위해서는 리모컨과 ThinQ 앱 조작이 필요합니다.

LG WHISEN | Objet Collection



자동 청정 관리
필터클린봇



온도/습도 자동 조절
스마트케어



자동 절전모드
레이더센서 외출절전



2030 부산세계박람회 유치, LG전자가 함께 응원하겠습니다



엘지닷컴에서 확인하세요
LGE.COM

*하루 8시간 사용 기준. 총 96시간(4주) 누적 사용 시 필터클린봇 청소 기능 작동. *메이컨 운전 중량 시간 메이컨 미스전 시, 리모컨으로 필터클린봇 청소 기능 작동 가능. *청소 성능: 저차 시점으로 1년(12개월) 분량 부하 후 먼지 제거 성능으로 확인되었으며, 클린봇이 필터를 청소한다면 6개월 주기로 먼지 제거를 위하여 교체 수월함으로 필터 청소도 가능합니다. *냉방 성능 유지: 실외온도 - 실내온도 차이가 5도 이상일 때, 실외온도 35도, 실외온도 F-Q23ADPA, 실외온도 - 실외온도 후 60% 이상 하락 시 냉방 성능 20% 하락. *자차 시점 결과로 실제 환경에 따라 다를 수 있습니다. *필터의 청소 정도는 사용 환경이나 사용 패턴에 따라 다를 수 있습니다. *리모컨의 원격 버튼을 눌러서 스마트케어 기능을 사용할 수 있습니다. *스마트케어가 냉방, 청정, 제습, 절전까지 자동으로 관리해 줍니다. *스마트케어(7)는 스마트케어 기능이 있는 모델에 한정되며, 스마트케어 기능은 모델별 상이할 수 있습니다. *제품 내의 레이더 센서를 통해 에어컨 동작 중 인체 부채 여부를 자동 감지하고 부채일 경우 설정에 따라 절전모드로 진입하거나 전원을 off 하여 에너지를 절약해 줍니다. *리모컨의 설정 버튼을 눌러 사용 가능합니다. *지체한 사용 방법은 사용 설명서를 참고하세요. *필터클린봇, 스마트케어, 레이더센서 외출절전 기능은 스탠드형 제품의 기능 설명이며, 필터클린봇과 레이더센서 외출절전 기능은 스탠드형 벽걸이 모델에 한정



GL ASSOCIATES

GL associates

GL associates is a Professional Space Design Company and has renowned for the best quality of contents creation and design since our establishment in 1999

Brand Space / Museum /
Expo Pavilion / Theme Park /
Public Environment /

CREATIVE DESIGN GROUP

서울시 강남구 봉은사로 449 밤부타워
WWW.GL-EX.COM

웨비나 안내

mmW-SDR SDR 기반 밀리미터파 솔루션

mmW-SDR = mmWave Technology + Software Defined Radio

■ 일자 : 2023년 6월 28일(수) ■ 시간 : 오후 2시 ~ 오후 3시 (한국시간)

mmW-SDR 플랫폼 테스트베드는 5G, SATCOM, 레이더, 합동통신 (Joint Communication) 및 레이더 센싱(JCRS) 분야에서 무선 연구의 잠재력을 최대한 발휘할 수 있도록 지원합니다. 저희가 준비한 웨비나에서 밀리미터파 무선 통신 및 센싱 솔루션에 대해 자세히 알아보십시오!

구체적인 주제는 다음과 같습니다.

- SDR/X410 기반 TMYTEK mmWave 플랫폼 기능
- 빔 스티어링을 수행하고 5G NR mmWave를 전송 및 분석하는 방법
- mmWave 안테나 설계 및 추적 알고리즘 검증 어플리케이션에 대한 사례 연구



▲ 웨비나 등록하기 ▲



The Time is NOW

5G

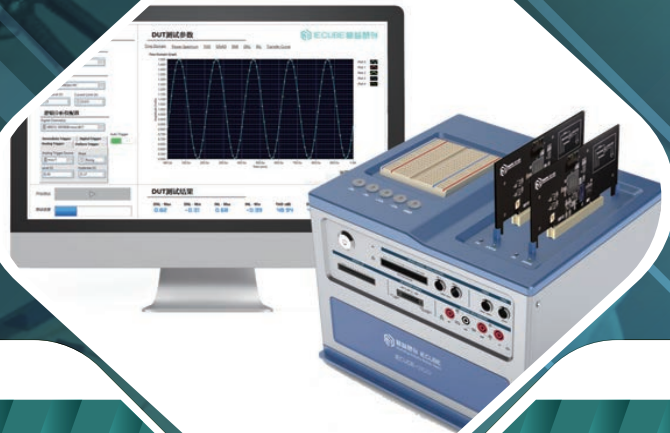
- ✓ A-GPS Location Test
- ✓ RF Channel Emulator
- ✓ GNSS Signal Emulator
- ✓ WiFi 6/6E/7 Solution
- ✓ O-RAN Solution
- ✓ 5G Service Experience Solution



IECUBE EDUCATION
Nurturing Industry-Ready Talent

IECUBE-3100

집적 회로 테스트 플랫폼



IECUBE-3100 소개

IECUBE-3100은 집적회로(IC) 테스트 및 교육 플랫폼으로서 무선 및 회로 등의 산업현장에 실제로 적용할 수 있는 시나리오를 적용하여 이 분야에서 세계적으로 선도적인 위치에 있는 NI의 테스트 및 측정 기술로 집적 회로 테스트 엔지니어의 양성을 위해 특별히 개발된 교육용 장비입니다.

ADC, DAC, PA, 디지털 로직 IC, 트랜지스터 등, 대표적인 집적회로의 테스트와 트레이닝을 이 장비 하나로 할 수 있습니다.

IECUBE-3100 특징



교육 현장의 많은 요구 사항들을 충족합니다.

집적 회로 산업에서 세계적 선도기업인 NI의 테스트 및 측정 기술을 기반으로 하는 이 제품은 산업 현장에 필요한 실제적 기술을 갖춘 인재로 훈련시켜 드립니다.



점진적으로 교육합니다.

교육 현장에서 필요한 특수한 상황을 고려하였고, 업계에서 요구하는 IC 테스트 기술을 단계적으로 훈련 시킵니다.



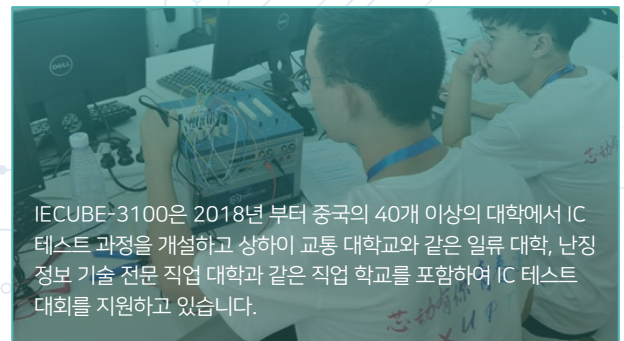
교수 효과를 업그레이드합니다.

수업과 경쟁을 결합하는 새로운 교수법을 도입하여, 경쟁을 통해 학습과 훈련을 촉진하도록 설계하여 교육효과를 향상시킵니다.

수행 가능한 실험 :

- ✓ LabVIEW 프로그래밍 소개
- ✓ 혼합 신호 IC 테스트 실험 (ADC/DAC)
- ✓ 연산 증폭기 IC 테스트 실험
- ✓ 수동 부품 테스트 실험
- ✓ 맞춤형 특수 칩 테스트 실험

성공 사례



IECUBE-3100은 2018년 부터 중국의 40개 이상의 대학에서 IC 테스트 과정을 개설하고 상하이 교통 대학교와 같은 일류 대학, 난징 정보 기술 전문 직업 대학과 같은 직업 학교를 포함하여 IC 테스트 대회를 지원하고 있습니다.

070-7872-0701

NI.NUBICOM.CO.KR

NUBICOM (주)누비콤



GNSS Simulation

GSG-8



GSG-7



GSG-5/6



Wavefront



Anechoic



Timing | PNT/INS | Anti-jamming/Spoofing

SecureSync2400



VersaPNT



BroadSense

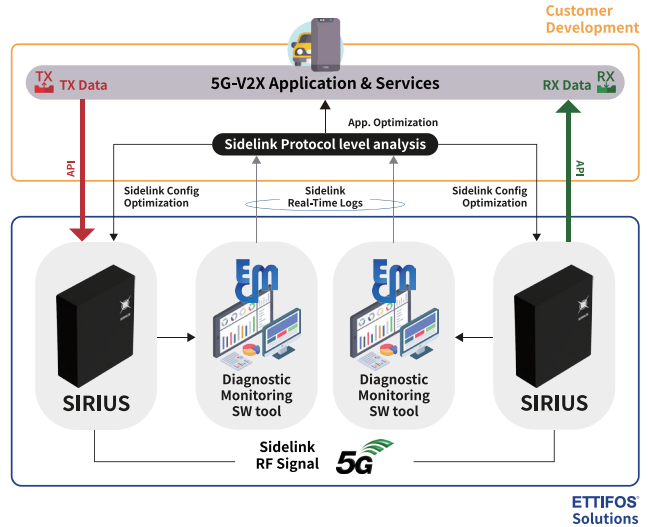
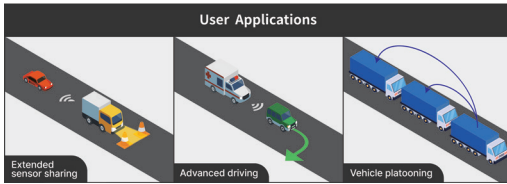
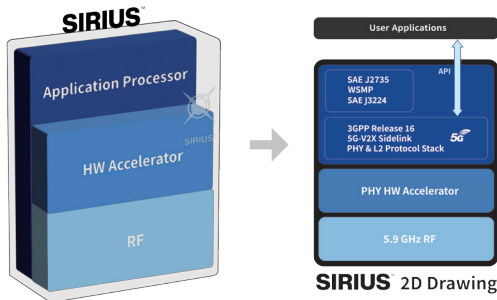


SIRIUS

World's First 5G-V2X Sidelink Platform

SIRIUS는 5G-V2X 사이드링크 (PC5) 통신의 기능 테스트와 성능 분석을 지원하며, 고급 사용 사례의 빠른 프로토타이핑을 지원하는 올인원 솔루션입니다.

- 자율협력주행 등 5G-V2X 응용서비스 실증용
- 3GPP Release 16+ SW 업그레이드 지원



SIRIUS로 5G-V2X 애플리케이션 또는 서비스를 실행하는 동안 문제가 발생하면, EDM은 원인을 찾기 위해 필요한 모든 정보를 제공합니다. 마찬가지로, EDM에서 수집된 정보를 사용하여 애플리케이션 또는 서비스를 개선할 수 있습니다.

- 5G-V2X 사이드링크 (PC5) 물리계층과 L2 프로토콜 계층 로그 및 분석
- 5G-V2X 실시간 성능 모니터링
- 5G-V2X 성능 분석을 위한 다양한 그래프

V2X-AIR



V2X 통신

V2X 애플리케이션

Dual-mode V2X OBU & RSU



DSRC와 C-V2X 통신 동시 지원

Connected in Motion

에티포스는 2018년에 설립된 5G 기술을 바탕으로 V2X 통신 솔루션을 제공하는 기업입니다. 우리의 비전은 도로 위 움직이는 모든 것들을 연결하는 것입니다. 교통사고와 불필요한 탄소배출이 없는 세상, 완전한 자율주행이 가능한 세상을 추구합니다.

[Inquire now](#)

pr@ettifos.com

www.ettifos.com

+82 31 8039 5000



AI FRONTIERS SUMMIT 2023

2023년 7월 14일(금)

한국과학기술회관

Online/Offline 하이브리드

AI



행사 안내

ICT 융합 단기강좌

바이오의료에서 로봇, 배터리,
에너지, 위성, 스마트시티까지



▶ Online 강좌

|일시| 2023년 7월 10일(월) ~ 12일(수)

|장소| 온라인 강좌

|주최| 한국통신학회

KICS :::::
한 국 통 신 학 회



행사 안내