ICEF 2023

ICEF 2023

International Conference on
Electrical Facilities and
informational technologies 2023

August 22(TUE) - 25(FRI), 2023
Almaty University of Power Engineering and
Telecommunications, Kazakhstan

"New Intelligence Technology :
Past, Present and Future"

Organized by : KIEE Electrical Facilities Society   Energo University

Co-Organized by : KOREA NATIONAL UNIVERSITY OF TRANSPORTATION

ICEF2023

International Conference on Electrical Facilities and
informational technologies 2023

CONTENTS

Welcome Message

We warmly welcome you to International Conference on Electrical Facilities and information technologies 2023

Dear Attendees,

On behalf of the ICEF2023 Organizing Committee, it is my pleasure to welcome you to our signature event for this year, the 2nd International Conference on Electrical Facilities and Information Technologies 2023 (ICEF2023) to be held in historic Almaty, Kazakhstan from August 22nd to 25th, 2023.

Under the theme "New Intelligence Technology: Past, Present and Future" this hybrid conference aims to bring together scholars, practitioners, educators, and students to exchange research ideas, outcomes, and experiences related to innovative electrical facilities and information technologies.

We have prepared an impressive array of keynote speakers, with ample time set aside for colleagues to discuss amongst themselves in intimate settings on key issues, as well as informal "icebreaker sessions" to build on our international students' network for future collaborative study. Furthermore, we have also included for you this year within our conference benefits package, a one-day tutorial course on state-of-the-art Smart Railway System and Logistics.

A very attractive and stimulating social program has also been prepared for you, which will start with a Welcome Reception and Registration Party on Tuesday evening, August 22st. On Thursday evening, August 24th, the Conference Gala Dinner will take place at Mountain Resort «Oi-Qaragai», the largest yurt in the world.

Many thanks to the members of KIEE Electrical Facilities Society, the ICEF2023 Organizing Committee members, and sponsoring organizations for providing their generous financial support. Particular thanks to Almaty University of Power Engineering and Telecommunications, Kazakhstan for the local support and their interest and commitment in hosting this event.

I wish the ICEF2023 Conference to be an unforgettable occasion for you and look forward to meeting you in person and online in the days ahead.

Warmly,

Prof. Dr. SangYule Choi, Ph.D.
Conference Chair
Professor of Mechatronics
Induk University, Seoul, Korea

Committee

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Murat Syzdykov (Rector, AUPET, Republic of Kazakhstan)

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Seungkwon Shin (Korea Railroad Research Institute, Korea)

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▌LOCAL CHAIR

Zhadyra Sagyndykova (AUPET, Republic of Kazakhstan)

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Conference Topics

Conference Topics Paper Topics Include, But Are Not Limited To:*

▌Session 1 : Future Electric Facility Planning and Operations

- Power Distribution Network Modeling, Analysis and Control
- HVDC, MVDC & LVDC: Design, Control and Protection
- AC-DC Hybrid Grid Operation, Control and Protection
- IOT(Internet Of Thing)
- Electrical Safety : Design, Control and Protection
- Electric Machinery and Drives
- Energy Storage Systems, Renewable Energy
- Heat Power Engineering

▌Session 2 : Smart Electric Facility

- Smart Grids, Micro-grid, and Utility Applications
- Smart Energy Management for Home, Building and Factory
- Smart Materials and Devices, Media Facade and Large Format Display
- Illuminating Design and Light Installation
- Electrical Installation Design and Construction Technology
- Technical Specification for Electrical Installation
- Converge Technique for Electric Facility
- Electrical Power Utilities

▌Session 3 : Information Technology

- Software System & Engineering
- Artificial Intelligence
- Wireless Communications and Networking
- Embedded System, IoT/Edge Computing
- VR/AR, Metaverse
- Data Science, Big Data, Database, Data Mining
- 3D Printing, Digital Twin
- Cybersecurity

Session 4 : Intelligent Transportation Technology

- Railway System & Technology
- Intelligent Transportation System
- Future Smart Automobile Technology
- Road Operation Technology

Session 5 : Aerospace Sciences and Aviation Technology

- Aerospace Systems and Technologies
- Aerospace Guidance, Navigation, and Control
- Aerospace Cybersecurity
- Aerospace Avionics Systems
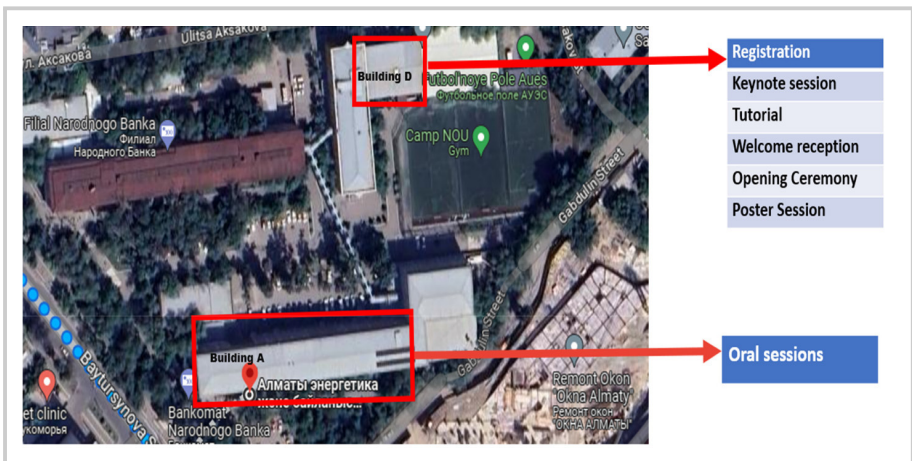- Remote Sensing
- Unmanned Aerial Vehicles

Venue Information

▌Almaty University of Power Engineering and Telecommunications, Kazakhstan

• Almaty University of Energy and Communications 126/1 Baitursynuly street, Almaty 050013, Kazakhstan

■ MAP

■ Address

Almaty University of Energy and Communications 126/1 Baitursynuly street, Almaty 050013, Kazakhstan

■ CONTACT US

Contact numbers: (727)323-11-75 (int.6724)
E-mail: zh.suimenbayeva@aues.kz

Program at a Glance

August 22 (TUE)

PROGRAM	Place: AUPET
Time	PROGRAM Room (D building. Assembly Hall)

	Time	PROGRAM Room (D building. Assembly Hall)
PM	13:00~	Registration
	14:00~14:40	■ Keynote Session (1) **Infrastructure Solutions and Experience of Batys Transit JSC: Projects for the Construction of Engineering Systems and Power Supply** Askar Iskakov *(JSC "Batys Transit")*
	14:40~15:20	■ Keynote Session (2) **Digital strategies in times of uncertainty** Miras Kassymov *(Axellect Kazakhstan and Central Asia LLP)*
	15:20~15:50	Coffee Break
	15:50~16:30	■ Keynote Session (3) **Human capital is the main value of energy companies** Talgat Temirkhanov *(Chairman of the Association of Legal Entities "Kazakhstan Electric Power Association", Kazakhstan)*
	16:30~17:10	■ Keynote Session (4) **Space Science and Technology: Challenges of Our Time** Marat Nurguzhin *(Chairman of the Board JSC "National Center for Space Research and Technology", Kazakhstan)*
	17:10~19:00	■ WORKSHOP (1) **SMART RAILWAY SYSTEM WORKSHOP**
	18:00~20:00	Welcome Reception (AUPET)

Program at a Glance

2nd Day	August 23 (WED)				
PROGRAM	**Place: AUPET**				
Time	**Room (D building. Assembly Hall)**				
AM 08:30~	Registration				
09:00~09:40	■ Keynote Session (5) Electric Vehicle Parking Lots for the Sustainable Energy Supply of Smart Cities Aydogan Ozdemir *(Professor of Istanbul Technical University, Turkey)*				
09:40~10:20	■ Keynote Session (6) Secure and Scalable IoT: An IoT Network Platform Based on Network Overlay and MAC Security Junwon Lee *(Ph.D. of Samsung SDS, Korea)*				
10:20~11:00	■ Keynote Session (7) Advancing Anomaly Detection Systems: Application of Normalizing Flows in Image and Time-Series Data Jeonghwan Gwak *(Professor of Korea National University of Transportation, Korea)*				
11:00~11:30	Coffee Break				
11:30~12:30	■ Opening Ceremony - Opening Speech - Welcome Speech				
12:30~14:00	Lunch (AUPET)				

	PROGRAM	**Place: AUPET (D building.Assembly Hall)**				
	Time	**Room 1 (A428)**	**Room 2 (A432)**	**Room 3 (A434)**	**Room 4 (A435)**	**Room 5 (A437)**
PM	14:00~15:40	Oral Session (1)	Oral Session (2)	Oral Session (3)	Oral Session (4)	Oral Session (5)
	15:40~16:20	Coffee Break				
	16:20~18:00	Oral Session (6)	Oral Session (7)	Oral Session (8)	Oral Session (9)	Oral Session (10)
	16:00-17:00	■ Kazakhstan- Korean student AUPET Tour [A building, room 213]				
	17:00~18:00	■ Kazakhstan- Korean student workshop [A building, room 213]				

Program at a Glance

3rd Day	August 24 (THU)

PROGRAM		Place: AUPET
Time		Room (D building. Assembly Hall)
AM	09:00~	Registration
	09:00~09:40	■ Keynote Session (8) **Preventive Maintenance Scheduling & Its Actions** HARISH, GARG *(Professor of Thapar Institute of Engineering & Technology, Patiala, India)*
	09:40~10:20	■ Keynote Session (9) **MaxViT-Unet: Multi-Axis Attention for Medical Image Segmentation** Asifullah Khan *(Professor of PIEAS, Islamabad, Pakistan)*
	10:20~10:40	Coffee Break
	10:40~11:20	■ Keynote Session (10) **Introduction of Korea Railway System - Past, Present, and the Future** Hag-Wone Kim *(Professor of Korea National University of Transportation, Korea)*
	11:20~12:00	■ Keynote Session (11) **An Intelligent Surveillance System for Human Behavior Analysis** Om Prakash *(Professor of HNB Garhwal University, Srinagar Garhwal, Uttarakhand, India)*
	12:00~12:40	■ Poster Session 1 [Building A 4th Floor]
	12:40~14:00	Lunch (AUPET)

PROGRAM		Place: AUPET (D building.Assembly Hall)				
Time		Room 1 (A428)	Room 2 (A432)	Room 3 (A434)	Room 4 (A435)	Room 5 (A437)
PM	14:00~15:40	Oral Session (11)	Oral Session (12)	Oral Session (13)	Oral Session (14)	
	14:30~15:30	■ Poster Session 2 [Building A 4th Floor]				
	18:30~20:30	Banquet				

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4th Day	August 25 (FRI)	
PROGRAM	Place: AUPET	
Time	Room (D building. Assembly Hall)	
AM	09:00~10:00	■ Special Session (1): Electric Facility Workshop
		■ Korea-Kazakhstan Industrial Exchange Technical Forum (1)
	10:00~11:00	■ Special Session (2): Intelligent Railway & Transportation Workshop
		■ Korea-Kazakhstan Industrial Exchange Technical Forum (2)
	11:00~12:00	■ Special Session (3): Intelligent Science & Open Source Workshop
		■ Korea-Kazakhstan Industrial Exchange Technical Forum (3)
PM	10:00~14:00	Industrial Exhibition

PROGRAM	Place: ALT
Time	Academy of Logisitics and Transport
AM	09:00~13:00	Kazakhstan-Korea Global Smart Railway Forum- II

Social Programs

Welcome Reception

August 22 (TUE) 18:00-20:00
Bakhshasaray event venue (Buy Ticket)

On the first day of the conference, please join to know each other!

Opening Ceremony

August 23 (WED) 11:30-12:30
Room (D building. Assembly Hall)

▌Opening Speech
- Prof. SangYule Choi (ICEF2023 Chairman, Korea)

▌Welcome Speech
- Rector Murat Syzdykov (AUPET, Republic of Kazakhstan)
- Rector Saltanat Amirgaliyeva (Academy of Logistic and Transport, Republic of Kazakhstan)
- Consul General Naecheon Park (Consulate General of the Republic of Korea in Almaty)
- Dr. Jun Hoon Park (Honorable President of Korea National University of Transportation, Korea)
- Aidyn Ayimbetov (Kazakhstani astronaut)

▌Scholarship Award Ceremony

The ICEE 2023 Opening Ceremony is coming up on Thursday. You all are cordially invited to the grand opening ceremony. We are looking forward to your gracious presence on this occasion.

Keynote session

August 22 (TUE)	14:00~ 14:40	■ Keynote Session (1) **Infrastructure Solutions and Experience of Batys Transit JSC: Projects for the Construction of Engineering Systems and Power Supply** Askar Iskakov *(JSC "Batys Transit")*
	14:40~ 15:20	■ Keynote Session (2) **Digital strategies in times of uncertainty** Miras Kassymov *(Axellect Kazakhstan and Central Asia LLP)*
	15:50~ 16:30	■ Keynote Session (3) **Human capital is the main value of energy companies** Talgat Temirkhanov *(Chairman of the Association of Legal Entities "Kazakhstan Electric Power Association", Kazakhstan)*
	16:30~ 17:10	■ Keynote Session (4) **Space Science and Technology: Challenges of Our Time** Marat Nurguzhin *(Chairman of the Board JSC "National Center for Space Research and Technology", Kazakhstan)*
August 23 (WED)	09:00~ 09:40	■ Keynote Session (5) **Electric Vehicle Parking Lots for the Sustainable Energy Supply of Smart Cities** Aydogan Ozdemir *(Professor of Istanbul Technical University, Turkey)*
	09:40~ 10:20	■ Keynote Session (6) **Secure and Scalable IoT: An IoT Network Platform Based on Network Overlay and MAC Security** Junwon Lee *(Ph.D. of Samsung SDS, Korea)*
	10:20~ 11:00	■ Keynote Session (7) **Advancing Anomaly Detection Systems: Application of Normalizing Flows in Image and Time-Series Data** Jeonghwan Gwak *(Professor of Korea National University of Transportation, Korea)*
August 24 (THU)	09:00~ 09:40	■ Keynote Session (8) **Preventive Maintenance Scheduling & Its Actions** HARISH, GARG *(Professor of Thapar Institute of Engineering & Technology, Patiala, India)*
	09:40~ 10:20	■ Keynote Session (9) **MaxViT-Unet: Multi-Axis Attention for Medical Image Segmentation** Asifullah Khan *(Professor of PIEAS, Islamabad, Pakistan)*
	10:40~ 11:20	■ Keynote Session (10) **Introduction of Korea Railway System - Past, Present, and the Future** Hag-Wone Kim *(Professor of Korea National University of Transportation, Korea)*
	11:20~ 12:00	■ Keynote Session (11) **An Intelligent Surveillance System for Human Behavior Analysis** Om Prakash *(Professor of HNB Garhwal University, Srinagar Garhwal, Uttarakhand, India)*

Special session

August 22 (TUE) ~ August 25 (FRI)
Room (D building. Assembly Hall), Room 5, A437, ALT

August 22 (TUE)	17:10~ 19:00	■ SMART RAILWAY SYSTEM WORKSHOP	D building. Assembly Hall
August 23 (WED)	16:00~ 17:00	■ Kazakhstan-Korean High Power Lab Workshop	D building. Assembly Hall
	17:00~ 18:00	■ Kazakhstan-Korean Student Workshop	D building. Assembly Hall
August 24 (THU)	16:00~ 18:00	■ Kazakhstan-Korea Global Smart Railway Forum- I	Room 5 A437
August 25 (FRI)	09:00~ 13:00	■ Kazakhstan-Korea Global Smart Railway Forum- II	Academy of Logisitics and Transport

Oral Session

August 23 (WED) ~ August 24 (THU)
Room 1 A428, Room 2 A432, Room 3 A434, Room 4 A435, Room 5 A437

August 23 (WED)	14:00~ 15:40	■ Oral Session 1 Session 3: Information Technology	Room 1 A428
	14:00~ 15:40	■ Oral Session 2 Session 1: Future Electric Facility Planning and Operations	Room 2 A432
	14:00~ 15:40	■ Oral Session 3 Session 3: Information Technology	Room 3 A434
	14:00~ 15:40	■ Oral Session 4 Session 3: Information Technology	Room 4 A435
	14:00~ 15:40	■ Oral Session 5 Session 3: Information Technology	Room 5 A437
	16:20~ 18:00	■ Oral Session 6 Session 3: Information Technology	Room 1 A428
	16:20~ 18:00	■ Oral Session 7 Session 1: Future Electric Facility Planning and Operations	Room 2 A432

August 23 (WED)	16:20~ 18:00	■ Oral Session 8 Session 3: Information Technology	Room 3 A434
	16:20~ 18:00	■ Oral Session 9 Session 3: Information Technology	Room 4 A435
	16:20~ 18:00	■ Oral Session 10 Session 3: Information Technology	Room 5 A437

August 24 (THU)	14:00~ 15:40	■ Oral Session 11 Session 4: Intelligent Transportation Technology	Room 1 A428
	14:00~ 15:40	■ Oral Session 12 Session 5: Aerospace Sciences and Aviation Technology	Room 2 A432
	14:00~ 15:40	■ Oral Session 13 Session 1: Future Electric Facility Planning and Operations	Room 3 A434
	14:00~ 15:40	■ Oral Session 14 Session 5: Aerospace Sciences and Aviation Technology	Room 4 A435

Poster Session

August 24 (THU) 12:00 ~ 15:10
[Building A 4th Floor]

DATE	Session		Conference Topics Session
August 24 (THU)	12:00~ 12:40	Poster Session 1	■ Session 1: Future Electric Facility Planning and Operations ■ Session 3: Information Technology
	14:30~ 15:10	Poster Session 2	■ Session 2: Smart Electric Facility ■ Session 4: Intelligent Transportation Technology ■ Session 5: Aerospace Sciences and Aviation Technology ETC

Online & Offline Assistance

❚Registration Desk | Lobby

- August 22 (TUE) 13:00 – 18:00
- August 23 (WED) ~ August 25 (FRI) 09:00 – 11:00
- Lobby D building. Assembly Hall

❚Registration Fee Covers [On-Site]

[Kazakhstan]
- For AUPET 18 000 KZT
- For other Kazakhstan Universities 32 000 KZT
- For Students 14 000 KZT

[normal distribution]
- Regular USD 600
- Student USD 300
- [Early-Virtual]
- Regular USD 300
- Student USD 150

Keynote Sessions, Conference Kit, Lunches

❚Personal Envelope

1. Name Badge
2. Program Book
3. Souvenir

❚Lunch

- August 23 (WED) 12:30 – 14:00
- August 24 (THU) 12:40 – 14:00

❚Coffee Break | Lobby

- August 22 (TUE) 15:20~15:50
- August 23 (WED) 11:00~11:30 / 15:40~16:20
- August 24 (THU) 10:20~10:40 / 14:50~15:00

Fresh coffee, tea and refreshments will be served during the break times.

❚DOWNLOAD MATERIALS

You can download your materials at my page or virtual website

ICEF 2023

▌How do I access the online session?

- Only participants who have completed
- Registration can access the ICEE 2023
- Virtual website. Please use the official
- Website login information (ID/PW).

▌What are the technical requirements needed to participate in the ICEF 2023

online?
You need an Internet connection and web browser. For the best viewing experience, we recommend that you join the conference using a supported internet browser, which includes Google Chrome, Firefox and Safari.

ICEF 2023 VIRTUAL Platform Guide

▌How do I access the online session?

- Only participants who have completed registration can access the ICEF 2023 (www.icef2023.org) virtual website. Please use the official website Registration login information (ID/PW).

Keynote, Oral Presentation   (on-site/online)

ZOOM Access Link For Each Conference Room   [GMT +06 / Almaty, Kazakhstan]

▌Opening Ceremony (on-site/online)

DATE		Live Sessions Access Link	Log-in ID
August 23 (WED)	11:30~ 12:30 ■ Opening Ceremony	https://us06web.zoom.us/j/8700834425?pwd= WEtHK0llaWZmTWtmTnhPUlVqRmlGUT09	Zoom Log-in ID:870 083 4425 ACCESS CODE: 1

▌Keynote Presentation (on-site/online)

DATE		Live Sessions Access Link	Log-in ID
August 22 (TUE)	14:00~ 14:40 ■ Keynote session (1)	https://us06web.zoom.us/j/8700834425?pwd= WEtHK0llaWZmTWtmTnhPUlVqRmlGUT09	Zoom Log-in ID: 870 083 4425 ACCESS CODE: 1
	14:40~ 15:20 ■ Keynote session (2)	https://us06web.zoom.us/j/8700834425?pwd= WEtHK0llaWZmTWtmTnhPUlVqRmlGUT09	Zoom Log-in ID: 870 083 4425 ACCESS CODE: 1
	15:50~ 16:30 ■ Keynote session (3)	https://us06web.zoom.us/j/8700834425?pwd= WEtHK0llaWZmTWtmTnhPUlVqRmlGUT09	Zoom Log-in ID: 870 083 4425 ACCESS CODE: 1
	16:30~ 17:10 ■ Keynote session (4)	https://us06web.zoom.us/j/8700834425?pwd= WEtHK0llaWZmTWtmTnhPUlVqRmlGUT09	Zoom Log-in ID: 870 083 4425 ACCESS CODE: 1
August 23 (WED)	09:00~ 09:40 ■ Keynote session (5)	https://us06web.zoom.us/j/8700834425?pwd= WEtHK0llaWZmTWtmTnhPUlVqRmlGUT09	Zoom Log-in ID: 870 083 4425 ACCESS CODE: 1
	09:40~ 10:20 ■ Keynote session (6)	https://us06web.zoom.us/j/8700834425?pwd= WEtHK0llaWZmTWtmTnhPUlVqRmlGUT09	Zoom Log-in ID:870 083 4425 ACCESS CODE: 1
	10:20~ 11:00 ■ Keynote session (7)	https://us06web.zoom.us/j/8700834425?pwd= WEtHK0llaWZmTWtmTnhPUlVqRmlGUT09	Zoom Log-in ID: 870 083 4425 ACCESS CODE: 1
	11:30~ 12:30 ■ Opening Ceremony	https://us06web.zoom.us/j/8700834425?pwd= WEtHK0llaWZmTWtmTnhPUlVqRmlGUT09	Zoom Log-in ID: 870 083 4425 ACCESS CODE: 1

DATE			Live Sessions Access Link	Log-in ID
August 24 (THU)	09:00~ 09:40	■ Keynote session (8)	https://us06web.zoom.us/j/8700834425?pwd= WEtHK0llaWZmTWtmTnhPUlVqRmlGUT09	▶ Zoom Log-in ID: 870 083 4425 ACCESS CODE: 1
	09:40~ 10:20	■ Keynote session (9)	https://us06web.zoom.us/j/8700834425?pwd= WEtHK0llaWZmTWtmTnhPUlVqRmlGUT09	▶ Zoom Log-in ID: 870 083 4425 ACCESS CODE: 1
	10:40~ 11:20	■ Keynote session (10)	https://us06web.zoom.us/j/8700834425?pwd= WEtHK0llaWZmTWtmTnhPUlVqRmlGUT09	▶ Zoom Log-in ID: 870 083 4425 ACCESS CODE: 1
	11:20~ 12:00	■ Keynote session (11)	https://us06web.zoom.us/j/8700834425?pwd= WEtHK0llaWZmTWtmTnhPUlVqRmlGUT09	▶ Zoom Log-in ID: 870 083 4425 ACCESS CODE: 1

▌Oral Presentation (on-site/online)

DATE			Live Sessions Access Link	Log-in ID
August 23 (WED)	14:00~ 15:40	■ Oral Session 1	https://us06web.zoom.us/j/7386073435?pwd= SHAzL1kwTmcyYm1PdkdzNVNLNUZ6dz09	▶ Zoom Log-in ID: 738 607 3435 ACCESS CODE: 1
	14:00~ 15:40	■ Oral Session 2	https://us06web.zoom.us/j/6118289105?pwd= V0lmWFRRL0R6Tm56QTdRUHNoMWI3QT09	▶ Zoom Log-in ID: 611 828 9105 ACCESS CODE: 1
	14:00~ 15:40	■ Oral Session 3	https://us06web.zoom.us/j/9127203688?pwd= dTVreXJLQXFzdVNrTUp0aVpZUzdJUT09	▶ Zoom Log-in ID: 912 720 3688 ACCESS CODE: 1
	14:00~ 15:40	■ Oral Session 4	https://us06web.zoom.us/j/2857636750?pwd= SHAzL1kwTmcyYm1PdkdzNVNLNUZ6dz09	▶ Zoom Log-in ID: 285 763 6750 ACCESS CODE: 1
	14:00~ 15:40	■ Oral Session 5	https://us06web.zoom.us/j/8700834425?pwd= WEtHK0llaWZmTWtmTnhPUlVqRmlGUT09	▶ Zoom Log-in ID: 870 083 4425 ACCESS CODE: 1
	16:20~ 18:00	■ Oral Session 6	https://us06web.zoom.us/j/7386073435?pwd= SHAzL1kwTmcyYm1PdkdzNVNLNUZ6dz09	▶ Zoom Log-in ID: 738 607 3435 ACCESS CODE: 1
	16:20~ 18:00	■ Oral Session 7	https://us06web.zoom.us/j/6118289105?pwd= V0lmWFRRL0R6Tm56QTdRUHNoMWI3QT09	▶ Zoom Log-in ID: 611 828 9105 ACCESS CODE: 1
	16:20~ 18:00	■ Oral Session 8	https://us06web.zoom.us/j/9127203688?pwd= dTVreXJLQXFzdVNrTUp0aVpZUzdJUT09	▶ Zoom Log-in ID: 912 720 3688 ACCESS CODE: 1

	DATE		Live Sessions Access Link	Log-in ID
August 23 (WED)	16:20~ 18:00	■ Oral Session 9	https://us06web.zoom.us/j/2857636750?pwd= SHAzL1kwTmcyYm1PdkdzNVNLNUZ6dz09	Zoom Log-in ID: 285 763 6750 ACCESS CODE: 1
	16:20~ 18:00	■ Oral Session 10	https://us06web.zoom.us/j/8700834425?pwd= WEtHK0llaWZmTWtmTnhPUlVqRmlGUT09	Zoom Log-in ID: 870 083 4425 ACCESS CODE: 1
August 24 (THU)	14:00~ 15:40	■ Oral Session 11	https://us06web.zoom.us/j/7305475584?pwd= dTVreXJLQXFzdVNrTUp0aVpZUzdJUT09	Zoom Log-in ID: 730 547 5584 ACCESS CODE: 1
	14:00~ 15:40	■ Oral Session 12	https://us06web.zoom.us/j/5104981166?pwd= b3M4cFJxUHFnZnpuU3kyWW8vNzg0QT09	Zoom Log-in ID: 510 498 1166 ACCESS CODE: 1
	14:00~ 15:40	■ Oral Session 13	https://us06web.zoom.us/j/6118289105?pwd= V0lmWFRRL0R6Tm56QTdRUHNoMWI3QT09	Zoom Log-in ID: 611 828 9105 ACCESS CODE: 1
	14:00~ 15:40	■ Oral Session 14	https://us06web.zoom.us/j/5520682143?pwd= WEtHK0llaWZmTWtmTnhPUlVqRmlGUT09	Zoom Log-in ID: 552 068 2143 ACCESS CODE: 1

How The Session Will Go

Oral Session

- Presentation time: 15 minutes Presentation + 5 minutes Live Q&A
- Make sure your presentation materials do not have compatibility issues beforehand.
- Given the ZOOM livestreaming, please arrive in the session room at least 15 minutes before the session.
- Summit your file to the staff of each presentation room before session starts.
- Presentations are to be done on-site

Poster Session

- Poster authors should print, bring and post the posters at the designated spot for on-site availability. [A1 Size : 594*841mm]
- Please make sure to stand by your poster during your assigned presentation time.
- Q&As will be made live on-site and via virtual website with comments and email.
- All posters will be posted on both platforms (online/offline) simultaneously during the conference dates.

Keynote Session 1

14:00~14:40	TUE, August 22, 2023

Room (D building. Assembly Hall)

Askar Iskakov
(JSC "Batys Transit")

Infrastructure Solutions and Experience of Batys Transit JSC: Projects for the Construction of Engineering Systems and Power Supply

Abstract

This presentation is dedicated to Batys Transit JSC, which has extensive experience and a stable production, technical and financial base. The company specializes in providing reliable external power supply for industrial and free economic zones. As part of the presentation, a portfolio of successful projects will be considered, including the construction of reliable power lines and substations of various types of voltage. The focus will be on the company's experience, its expert solutions and ability to effectively implement complex engineering tasks.

Biography

Iskakov Askar Kezhekovich graduated from the Almaty Energy Institute in 1992, electrical engineer. He has a doctorate in technical sciences.

From 1978 to 1995, his professional activity was related to science. He worked as a junior researcher, senior lecturer, associate professor at the Almaty Energy Institute, research assistant, graduate student at the Moscow Power Engineering Institute.

From 1995 to 2005, he managed various business structures.

Since November 2005, he has been General Director, Chairman of the Management Board, Member of the Board of Directors, Chairman of the Board of Directors of Batys Transit JSC.

Honored Power Engineer of Kazakhstan, Honored Power Engineer of the CIS.

Keynote Session 2

14:40~15:20	TUE, August 22, 2023

Room (D building. Assembly Hall)

Miras Kassymov
(Axellect Kazakhstan and Central Asia LLP)

Digital strategies in times of uncertainty

Abstract

In modern conditions, Kazakh companies are faced with a deferred demand for technological solutions, which can lead to a shortage of qualified personnel. Companies seek to attract IT specialists, including from Russia, increasing competition and developing outsourcing. The state plays an important role in the development of technologies through the Digital Kazakhstan program, improving the quality of life and digitalization of social relations. In government agencies, there is an arrival of young managers using digital tools to increase efficiency. All this creates a new environment for the digital development of companies, emphasizing the importance of state influence.

Biography

Miras Kasymov is an experienced leader and specialist in the field of management and business development. He was educated at the University of Redin and other universities. He has successfully held senior positions in companies such as Accenture, Bi Group, NAC Kazatomprom JSC, SAP AG, Microsoft and others. His expertise includes strategic development, project management, partnerships and technological innovation. Thanks to his skills and experience, Miras Kasymov has successfully implemented transformation and optimization projects, managed teams and contributed to business development in various sectors of the economy, including technology, energy and innovation.

Keynote Session 3

Room (D building. Assembly Hall)

Talgat Temirkhanov
(Chairman of the Association of Legal Entities "Kazakhstan Electric Power Association", Kazakhstan)

Human capital is the main value of energy companies

Abstract

Energy has always been the most important industry in the country. Energy problems are actively discussed at all levels. The solution of all problems is impossible without qualified personnel. The shortage of this resource leads not only to an increase in prices, but also the timing of work, deliveries, and as a result, the untimely commissioning of facilities. Human resources, the quality of the company's personnel, is the most important factor in the success of any economic reforms. Therefore, today the problem of the shortage of highly qualified personnel in the Kazakh energy sector comes to the fore and is one of the most urgent and requiring urgent solutions.

Biography

Temirkhanov T.K. received a bachelor's degree in mining in the specialty "Technology of integrated mechanization of mining of mineral deposits" at the Karaganda State Technical University in Karaganda, in 2008.

He began his career in 2008 at ArcelorMittal Temirtau JSC as a mining foreman at the Saransk Mine. In 2013, he headed the Department of Labor Protection, Safety and Environmental Protection of CHEM-plus LLP. Then he entered the civil service at the Ministry of Energy of the Republic of Kazakhstan. In 2015, he held the position of Director of the Department of Ecology and Industrial Safety ALE "Republican Association of Mining and Metallurgical Enterprises". From 2015 to 2022, Managing Director, Member of the Management Board - Deputy Chairman of the Board of the National Chamber of

Entrepreneurs of the Republic of Kazakhstan "Atameken". Currently, he holds the position of Chairman of the ALE "Kazakhstan Electric Power Association", the subject of which is the coordination of activities and the creation of conditions for fair functioning, as well as the representation and protection of the common interests of the subjects of the electric power industry of the Republic of Kazakhstan.

Keynote Session 4

16:30~17:10	TUE, August 22, 2023

Room (D building. Assembly Hall)

Marat Nurguzhin
(Chairman of the Board JSC "National Center for Space Research and Technology", Kazakhstan)

Space Science and Technology: Challenges of Our Time

Abstract

Based on analytical studies of Kazcosmos and practical experience, the report identifies the main directions of development of the modern space industry. The evolution of the "New Cosmos" is considered, the main drivers that determine the directions of development of space science and technology are identified: cheaper launches, miniaturization of satellites, the use of modular technologies and vertical integration of the services of satellite operators.

A model of interaction between key segments of the space industry is defined: Upstream, Midstream and Downstream. It is noted that the Downstream segment occupies a significant volume of turnover (up to 80%) in the global space economy. At the same time, the Upstream segment is based on development and R&D on the creation of space equipment and technologies.

The current situation and the main directions of development of the space industry of Kazakhstan are given. The expediency of creating an aerospace cluster "Almaty" in Almaty is substantiated.

Biography

Nurguzhin M.R. - Doctor of Technical Sciences, Professor, Academician of the National Academy of Engineering of the Republic of Kazakhstan, National Academy of Mechanical Engineering and Transport of the Republic of Kazakhstan. He graduated from the Bauman Moscow State Technical University (Moscow) with a degree in Lifting and

Transport Machinery and Equipment (1980) and postgraduate studies (1982-1985). Mechanical engineer. Military specialty "Anti-aircraft missile forces of air defense". He worked as Vice-Rector and Rector of Universities, Chairman of the Aerospace Committee and Advisor to the Minister of Education and Science of the Republic of Kazakhstan, President of JSC NC Kazakhstan Gharysh Sapary, Vice Minister of two ministries of the Republic of Kazakhstan. Since 2020, he has been the Chairman of the Management Board of NCSIT. Nurguzhin M.R. is one of the largest specialists in Kazakhstan in the field of space science and technology. Under his leadership, the Earth Remote Sensing Space System, the Special Design and Technology Bureau and the Space Technology Assembly and Test Complex, and the High-Precision Satellite Navigation System were created.

Author of more than 250 scientific papers, incl. 6 monographs, 9 textbooks, 3 patents, 6 copyright certificates and 7 intellectual property certificates.

Keynote Session 5

09:00~09:40	WED, August 23, 2023

Room (D building. Assembly Hall)

Organizer: Seungkwon Shin (Korea Railroad Research Institute, Korea)

Aydogan Ozdemir
(Professor of Istanbul Technical University, Turkey)

Electric Vehicle Parking Lots for the Sustainable Energy Supply of Smart Cities

Abstract

Electric Vehicles, EVs, have continued their steady development over the years with advancements in battery life, energy efficiency, and travel distances. In the next decade, a fast-charging infrastructure will potentially be needed in large cities to properly support EVs penetration in the market. The proliferation of plug-in electric vehicles has led to increased public charging infrastructure in cities worldwide. Grid-connected parking lot spaces are the most common charging option due to their technological readiness and convenience of adoption. Since the batteries aggregated by parking lots can be regarded as virtual energy storage, grid-connected parking lots are expected to provide many benefits to the urban distribution grid. This presentation is devoted to a comprehensive methodological framework to evaluate the potential benefits of utilizing grid-connected parking lot infrastructures to promote the sustainability of energy supply in future power distribution grids.

Biography

Aydogan Ozdemir was born in Artvin, Turkey, in January 1957. He received the B.Sc., M.Sc., and Ph.D. degrees in electrical engineering from Istanbul Technical University, Istanbul, Turkey, in 1980, 1982, and 199y. He is currently a full Professor at Istanbul Technical University. His current research interests are in electric power systems and high-voltage engineering, emphasizing asset management, reliability analysis and intelligent method applications in power system modeling, simulation, analysis and control, smart grids, and building automation systems. He has published more than 150 technical papers and conducted several research activities. He is a Member of the National Chamber of Turkish Electrical Engineering and a Senior Member of IEEE PES.

Keynote Session 6

09:40~10:20	WED, August 23, 2023

Room (D building. Assembly Hall)

Organizer: Juhee Choi (Sangmyung university, Korea)

Ph.D. Lee Junwon
(Samsung SDS, Korea)

Secure and Scalable IoT: An IoT Network Platform Based on Network Overlay and MAC Security

Abstract

IoT, which is closely connected with our daily life, shows high growth in the automotive, healthcare, and retail fields. IoT security threats can cause severe problems in our lives. However, the security of the IoT network is insufficient to cope with security threats. Therefore, an attacker can use man-in-the-middle-attacks (MITM), DNS manipulation, and route tampering for eavesdropping, privacy breach, service outages and delay, power consumption, and system manipulation. Currently, VPN and data encryption is applied to protect the IoT network from these security threats. However, due to the limited resources of IoT device, the TCP/IP-based VPN and encryption are also limited. Although a lightweight IoT communication protocol such as LoWPAN is used, TCP/IP-based VPN such as IPsec, OpenVPN, and Wireguard require bandwidth, CPU/memory, and electric power at the level of general endpoint devices.

It is proposed that a secure and scalable IoT (SSI) network platform that can prevent security threats while minimizing use of computing resources of an IoT device. SSI, which has a lower load than TCP/IP-based VPN, is a layer 2 VPN and supply data link frame encryption. L2TP and VXLAN are provided for a scalable layer 2 VPN, and the MACsec algorithm encrypts layer 2 frames. SSI shows 30% network speed improvement and 31.6% CPU usage reduction compared to IoT network applied OpenVPN.

Biography

He is a principal engineer at Samsung SDS and holds a Ph.D. from the Department of Computer Science and Engineering at Korea University in Seoul, Korea. His experience includes an 8-year tenure as a network engineer (2002-2009), during which he consulted, proposed, operated, and built the infrastructure for enterprise companies such as Tesco, Hynix, and Samsung.

Since 2010, he has been serving as a security engineer in the Integrated Security Center of Samsung. His duties encompass network security review and audit, security review of system architecture, and security incident investigation and response.

His Ph.D. research focused on an AI-based abnormal detection model and a public cloud-based IoT platform. He continues to apply these studies in his current projects, actively working to protect Samsung affiliates.

Keynote Session 7

10:20~11:00	WED, August 23, 2023

Room (D building. Assembly Hall)

Organizer: Juhee Choi (Sangmyung university, Korea)

Jeonghwan Gwak
(Professor of Korea National University of Transportation, Korea)

Advancing Anomaly Detection Systems: Application of Normalizing Flows in Image and Time-Series Data

Abstract

The advent of machine learning has reshaped the landscape of data analysis, providing robust tools for tasks such as anomaly detection. However, traditional techniques often fall short when dealing with complex distributions in high-dimensional data spaces, frequently encountered in fields like image classification and time-series analysis. In this talk, the potential of Normalizing Flows (NF) - an innovative technique that transforms intricate data distributions into simpler ones, such as Gaussian - is explored to enhance the performance of anomaly detection systems across diverse data types. In this talk, the adaptability of NF-based systems in modeling complex data distributions is highlighted, leveraging their unique capabilities of efficient and accurate likelihood calculation. While previous research has primarily applied NF for image-based anomaly detection, this talk broadens the scope to include its potential application to time-series data, a research area still in its infancy. Insights into the prospects of optimizing feature extractor modules for image data and developing foundational models for time-series anomaly detection using NF are presented. By virtue of their efficient and flexible nature, NF present a promising direction for anomaly detection. Future research is envisaged to focus on optimizing the design of NF modules, curating diverse anomaly detection datasets, and evaluating the practical applicability of NF in various real-world domains. This talk aims to foster a discussion on the untapped potential of NF in anomaly detection, opening up new avenues in machine learning and data analysis research.

Biography

   Jeonghwan Gwak (Senior Member, IEEE) received his Ph.D. degree in machine learning and artificial intelligence from the Gwangju Institute of Science and Technology (GIST), Gwangju, South Korea, in 2014. From 2002 to 2007, he worked for several companies and research institutes as a Researcher and Chief Technician. He then served as a Postdoctoral Researcher at GIST from 2014 to 2016, followed by a position as a Research Professor from 2016 to 2017. From 2017 to 2019, he was a Research Professor with the Biomedical Research Institute and the Department of Radiology at Seoul National University Hospital, Seoul, South Korea. Since 2019, he has been affiliated with the Korea National University of Transportation (KNUT), Chungju, Republic of Korea, starting as an Assistant Professor and progressing to an Associate Professor position in 2021. He currently serves as the Director of the Algorithmic Machine Intelligence Laboratory. His research interests include deep learning, computer vision, image and video processing, AIoT, fuzzy sets and systems, evolutionary algorithms, optimization, and relevant applications in medical and visual surveillance systems.

ICEF 2023

Keynote Session 8

09:00~09:40	THU, August 24, 2023

Room (D building. Assembly Hall)

Organizer: Seungkwon Shin (Korea Railroad Research Institute, Korea)

HARISH, GARG

(Professor of Thapar Institute of Engineering & Technology, Patiala, India)

Preventive Maintenance Scheduling & Its Actions

Abstract

This task centers on the periodic preventive maintenance (PM) of a system with deteriorated components by simultaneously considering the three actions, mechanical services, repair and replacement for a multi-component system. The mathematical approach behind the corrective and maintenance action scheduling is discussed. The degraded behaviour of the component is modelled by a reliability equation, and the effect of PM actions to reliability is formulated based on maximizing the maintenance-benefit analysis.

Biography

Dr. Harish Garg is an Associate Professor at the Thapar Institute of Engineering & Technology, Deemed University, Patiala, Punjab, India.

In the three years 2020, 2021, and 2022, he was named to Stanford University's Top 2% Scientist List, with a rank of #1 in India and #229 in the world. He is the recipient of the Obada-Prize 2022 – Young Distinguished Researchers. He is also the recipient of the Top-Cited Paper by an India-based author (2015 – 2019) from Elsevier Publisher. He also serves as an advisory board member of the Universal Scientific Education and Research Network (USERN).

Dr. Garg's research interests include Computational Intelligence, Multi-criteria

decision making, Evolutionary algorithms, Reliability analysis, Expert systems and decision support systems, Computing with words, and Soft Computing. He has authored more than 454 papers (over 405 are SCI) published in refereed international journals, including IEEE Transactions, Elsevier, Springer etc. He has also authored seven book chapters. Also, he edited 8 books from Elsevier, Springer and other publishers. His Google citations total more than 20400, with an H-index of 81, and his SCOPUS citations total more than 16050, with an H-index of 71.

Dr. Garg also serves on the editorial boards of several leading international journals, this includes the Founding Editor-in-Chief of the Journal of Computational and Cognitive Engineering. He is also the Associate Editor of CAAI Transactions on Intelligence Technology, Alexandria Engineering Journal, Journal of Intelligent & Fuzzy Systems, Complex and Intelligent Systems, Kybernetes, Journal of Industrial & Management Optimization, International Journal of Computational Intelligence Systems, etc.

Keynote Session 9

09:40~10:20	THU, August 24, 2023

Room (D building. Assembly Hall)

Organizer: Juhee Choi (Sangmyung university, Korea)

Asifullah Khan
(Professor of PIEAS, Islamabad, Pakistan)

MaxViT-Unet: Multi-Axis Attention for Medical Image Segmentation

Abstract

Convolutional neural networks have made significant strides in medical image analysis in recent years. However, the local nature of the convolution operator inhibits the CNNs from capturing global and long-range interactions. Recently, Transformers have gained popularity in the computer vision community and also medical image segmentation. But scalability issues of self-attention mechanism and lack of the CNN like inductive bias have limited their adoption. In this work, we present MaxViT-UNet, an Encoder-Decoder based hybrid vision transformer for medical image segmentation. The hybrid decoder, also based on MaxViT-block, is designed to harness the power of convolution and self-attention mechanism at each decoding stage with minimal computational burden. The multi-axis self-attention in each decoder stage helps in differentiating between the object and background regions much more efficiently. The hybrid decoder block initially fuses the lower level features upsampled via transpose convolution, with skip-connection features coming from hybrid encoder, then fused features are refined using multi-axis attention mechanism. The decoder block is repeated multiple times to accurately segment the nuclei regions. Experimental results on MoNuSeg dataset proves the effectiveness of the proposed technique.

Biography

Dr. Asifullah Khan , is an exceptional educator and researcher with a wealth of experience spanning over 25 years. Currently serving as a Professor at PIEAS University in

Islamabad, he is highly esteemed in his field and has been recognized with numerous prestigious awards and distinctions.

Dr. Asifullah Khan's academic background is impressive, having earned his MS and PhD in Computer Systems Engineering from GIK Institute in 2003 and 2006, respectively. Additionally, he completed two years of Post-Doctoral research in the field of Image Processing and Machine Learning at the Guwangju Institute of Science and Technology (GIST) in South Korea.

Dr. Asifullah Khan is a prolific researcher with a particular focus on Artificial Intelligence. He has published over 140 international journal articles with over 8,500 citations, 55 conference papers, and 8 book chapters. He is a reviewer of more than 70 international Journals. He has supervised 26 PhD scholars to date and has actively engaged in AI research, particularly in Deep Learning. He has also been awarded eight research grants as Principal Investigator.

Dr. Asifullah Khan's contributions have been recognized internationally, with Stanford University including him in the World's Top 2% Scientists for both career-long and last year categories in 2020, 2021, and 2022. In addition, he has been awarded four Outstanding Research Awards and a Best University Teacher Award from the Higher Education Commission (HEC). He also received the PAS-COMSTECH Prize in Computer Science & I.T. in 2011 and Research Productivity Awards from the Pakistan Council for Science and Technology (PCST) in 2012-2016. He has also been honored with the prestigious civil award, President's Award for "Pride of Performance" in 2018.

Keynote Session 10

10:40~11:20	THU, August 24, 2023

Room (D building. Assembly Hall)

Organizer: Chulmin PARK (Korea Railroad Research Institute, Korea)

Hag-Wone Kim
(Korea National University of Transportation, Korea)

Introduction of Korea Railway System – Past, Present, and the Future

Abstract

Efforts to reduce carbon emissions are being made in the transportation sector, with a strong focus on the efficient transportation perspective of railways, which have proven to be the most competitive mode. When examining the amount of carbon emitted per kilometer per person, railways produce only 1/25th of the emissions compared to conventional vehicles. This presentation discusses the past, present, and future of South Korea's railway system, which has been equipped with such transportation competitiveness.

Starting with the introduction of the Gyeongin Line in 1899, South Korea's railways transitioned to the era of subways in 1974, and later saw the completion of the first phase of the Gyeongbu High-Speed Railway in 2004. Currently, high-speed railways have been introduced on various routes such as Gyeongbu Line, Honam Line, Gangneung Line, Jungang Line, and Buyeo-Chungju Line. Recently, the dispersed-drive type EMU-320, capable of reaching a maximum speed of 350 km/h, has been introduced. This railway system is gradually being expanded, and in the future, the popularization of urban high-speed rail, GTX, is expected to further enhance the competitiveness of trunk railways and enable the expansion of public transportation through the introduction of wireless trams.

For the future, continuous efforts are anticipated to achieve higher transportation efficiency in railways by focusing on the high-efficiency and lightweighting of vehicle

power systems and expanding predictive maintenance capabilities. The presentation also aims to introduce various railway-related research conducted by Korea Transportation University.

Biography

Hag-Wone Kim received his B.S. degree in Electrical Engineering from Korea University,Seoul, Korea, in 1989; and his M.S. and Ph.D.degrees in Electrical and ElectronicsEngineering from the Korea AdvancedInstitute of Science and Technology (KAIST),Daejeon, Korea, in 1991 and 2004,respectively. From 1991 to 2008, he worked for LG Electronics, Digital Appliance Research Lab., Seoul,Korea. Since 2008, he has been with the Department of Electronics Engineering at the Korea National University of Transportation, Chungju, Korea. His current research interests include variable speed motor drives and powerconverters. He had been the Editor in Chief in the Korean Institute of Power Electronics (KIPE), Director of Conference, Director of general affair. He is now president of KIPE. He has been a member of the Institute of Electrical and Electronics Engineers (IEEE).

ICEF 2023

Keynote Session 11

An Intelligent Surveillance System for Human Behavior Analysis

Abstract

Computer vision allows the machine to understand the world like human vision system. Security of any public place like airport, railway stations, or any public gather place is a crucial issue. Analyzing the human behavior is an important task in any video surveillance system. Now a days ML/DL based methods are widely used for computer vision problems.

Analyzing the human behavior is becoming more interesting and challenging problem in computer vision. It is more demanding area of research due the complex activity of a human. Few tasks that are essentially required for understanding human behavior are classification, identification, activity recognition, gesture and posture detection, etc.

Biography

Om Prakash received PhD (Computer Science) degree from University of Allahabad, India in 2014. He has worked in academics and industry as faculty and research scientist. From 2015 to 2016, he worked as a postdoctoral researcher in Gwangju Institute of Science and Technology, Gwangju, South Korea. Currently, he is working as Assistant Professor in Hemvati Nandan Bahuguna Garhwal University (A Central University), Srinagar (Garhwal), India. He has published over 40 papers in International journals and conference proceedings. His research interests include image and video processing, computer vision, wavelet transforms and multisensory data fusion, Machine Learning, Thermography and Medical Image Processing.

Special Sessions

09:00~13:00	FRI, August 25, 2023
Room (Room 5, A437, ALT)	

Kazakhstan-Korea Global Smart Railway Forum

Time	Contents	Note
09:30~11: 30	Reception and Registration	
	Korea Railroad Company	
	Seoul Metro	
	Kazakhstan Temir Zholy (KTZ)	
	Incheon Metro	
	Almaty Metro	
	Korea Railroad Research Institute (KRRI)	
	SR	
	Coffee Break or Campus Tour	

Time	Contents	Speaker	Note
11:30~13:00	- Opening speech - Welcome speech - Congratulatory speech	- Prof. J.W. Kang - Rector Amirgaliyeva S.N. - Lavrinenko Y.I.	Chairman of the Board of Directors Kazakhstan Temir Zholy (KTZ)
	Introduction of ALT	Dr. Gani Balbayev	ALT
	History of High Speed Trains in Korea	Dr. Gil-Hyun Kang	KNUT
	History of Kazakhstan Railway	Alik Assel	Deputy Dean, ALT
	Development and demonstration of a transfer type automatic charging system for electric bus	Dr. Seung-Kwon Shin	KRRI
	Automatic Cleaning System for Rigid Conductor in the Underground Section	Dr. Cheol-Min Park	KRRI,
	Professional staff is the key to the effective development of the transport and logistics complex	Prof. T. Chigambayev	ALT
	Introduction of Kazakhstan Temir Zholy	Almagambetov Kanat Esmukhanovich	Deputy Chairman of the Board of JSC "NC "KTZ"
	Almaty metro	Andreev Pavel Veniaminovich	Head of automation and communication service
	Leading Company in Electric Railway Construction: Sejong Engineering	Mr. Sang Woong Lee	Sejong Engineering Ltd
	Closing Speech	ALT Rector	
	Group Photo and Lunch		

Oral Session 1

14:00~15:40	Wed, August 23, 2023

Room : A428

Chair: Assel Mukasheva (AUPET, Kazakhstan)

OS1-1
14:00~14:20

Improved LQR control using fuzzy logic and Kalman filter controller of DC motor

Adil Maidanov[1]*, Sabyrzhan Atanov[1], and Hüseyin Canbolat[2]

[1]L. N. Gumilev Eurasian National University, Kazakhstan, [2]Ankara Yildirim Beyazit University, Kazakhstan

OS1-2
14:20~14:40

Digital Transformation of Document Support for Enterprise Quality Management System

Shara Toibayeva and Irbulat Utepbergenov

Almaty University of Power Engineering and Telecommunications, Kazakhstan

OS1-3
14:40~15:00

On the issue of constructing and identifying the parameters of the piezometric pattern of pumping wells in the underground leaching of metals

Bakhyt Mukhanov[1], Zhanar Omirbekova[2], Yerbol Orakbayev[1], and Gulmira Bazil[1]

[1]Almaty University of Power Engineering and Telecommunications, Kazakhstan, [2]Satbayev University Almaty, Kazakhstan

OS1-4
15:00~15:20

Analysis and synthesis of single-bit adders for multi-bit adders with sequential transfers

Sakhybay Tynymbayev[1], Assel Mukasheva[1], and Ibragimov Kuanyshbek[2]

[1]Almaty University of Power Engineering and Telecommunications Almaty, Kazakhstan, [2]Al-Farabi Kazakh National University, Kazakhstan

Oral Session 2

14:00~15:40	Wed, August 23, 2023

Room : A432

Chair: Jung-Ju Kim (Hoseo University, Korea)

OS2-1
14:00~14:20

Analysis for Fault Characteristics of MMC in DC Distribution System

Jin-Sol Song[1], Jong-Myoung Kim[1], Seung-Whan Bae[1], Arif Mehdi[1], S Jarjees Ul Hassan[1], Abraham. D. Arefaynie[1], Zeeshan Haider[1], Chul-Hwan Kim[1]*, Myung-Hwan Min[2], and Tae-Pung An[2]

[1]Sungkyunkwan University, Korea, [2]ENTEC Electric & Electronic, Korea

OS2-2
14:20~14:40

Assessment of Locational and Total Hosting Capacity of Distribution Network with Multitype DGUs by Iterative OPF Method

S Jarjees Ul Hassan, Arif Mehdi, Jin-Sol Song, Abraham D. Arefaynie, Zeeshan Haider, and Chul-Hwan Kim*

Sungkyunkwan University, Korea

OS2-3
14:40~15:00

Optimal Parameter Design of Thyristor-based Multi-module SSCB in MVDC Network

Jong-Myoung Kim, Jin-Sol Song, Seung-Whan Bae, and Chul-Hwan Kim*

Sungkyunkwan University, Korea

OS2-4
15:00~15:20

Investigation of Grounding Schemes in Hybrid (AC/DC) Medium Voltage Distribution Networks

Zeeshan Haider, Arif Mehdi, S Jarjees Ul Hassan, Jin-Sol Song, Abraham D. Arefaynie, and Chul-Hwan Kim*

Sungkyunkwan University, Korea

Oral Session 3

14:00~15:40	Wed, August 23, 2023

Room : A434

Chair: Yemar Amitov (AUPET, Kazakhstan)

OS3-1
14:00~14:20

Research and development of an information system for speech recognition based on neural network algorithms.

Maksat Kanashev[1], Sergiy Gnatyuk[2], Mirambayeva Nazym[3], and Assel Mukasheva[4]

[1]*Almaty University of Power Engineering and Telecommunications, Kazakhstan, [2]National Aviation University National Aviation University, Ukraine, [3]Almaty University of Energy and Communications College Almaty, Kazakhstan, [4]Almaty University of Power Engineering and Telecommunications, Kazakhstan*

OS3-2
14:20~14:40

Research and development of sign language recognition system using neural network algorithm.

Yegor Matveyas, Arailym Keneskanova, Dastan Kambarov, and Assel Mukasheva

Almaty University of Power Engineering and Telecommunications, Kazakhstan

OS3-3
14:40~15:00

Research and Development of a Chatbot Using Neural Network Technologies to Process Requests

Kyzyrov Daniyar Ersainuly and Sapakova Saya Zamanbekovna

International Information Technologies University, Kazakhstan

OS3-4
15:00~15:20

A Study on the Effective Multimodal Approach for Anomaly Detection using Gramian Angular Difference Field from Heating, Ventilation, and Air Conditioning (HVAC) System of Railways

Beomjun Kim[1], Younghoon Jeon[1], Jeong Won Kang[1], Chulsu Kim[1], Oh Kuen Kwon[2]*, and Jeonghwan Gwak[1]*

[1]*Korea National University of Transportation, Korea, [2]Semyung University, Korea*

OS3-5
15:40~15:40

Advancing Railway Track Segmentation: Harnessing the Power of ResUNet and Self-Supervised Learning Paradigms

Changjoon Park, Jeong Won Kang, and Jeonghwan Gwak*

Korea National University of Transportation, Korea

Oral Session 4

14:00~15:40	Wed, August 23, 2023

Room : A435

Chair: Seungkwon Shin (Korea Railroad Research Institute, Korea)

OS4-1
14:00~14:20

Calculating FMEA variables of software failure risks based on journals and metrics

Denis Valyayev[1], Bolshibayeva Aigerim[2], Dinargul Mukhammejanova[1], and Assel Mukasheva[1]
[1]Almaty University of Power Engineering and Telecommunications, Kazakhstan, [2]International IT University, Kazakhstan

OS4-2
14:20~14:40

Comparative analysis of Hadoop and Spark performance through different data processing tasks

Yerulan Suynullayev[1], Sergiy Gnatyuk[2], Didar Yedilkhan[3], Aisulu Serik[1], and Assel Mukasheva[1]
[1]Almaty University of Power Engineering and Telecommunications, Kazakhstan, [2]National aviation university, Ukraine, [3]Astana IT University, Kazakhstan

OS4-3
14:40~15:00

The Use Of Machine Learning Methods In The Field Of Retail

Kuanyshbek N.S and Sapakova S.Z*
Al-Farabi Kazakh National University, Kazakhstan

OS4-4
15:00~15:20

A study on false defect management of PCB ICT inspection using failure rate Estimation

Changmok Park* and Sangyule Choi
Induk University, Korea

Oral Session 5

14:00~15:40	Wed, August 23, 2023

Room : A437

Chair: Chulmin PARK (Korea Railroad Research Institute, Korea)

OS5-1
14:00~14:20

VIDEO STREAM ANALYSIS ALGORITHMS BASED ON THE OPENCV LIBRARY USING THE RASPBERRY P S PLATFORM

Adilzhan Kereyev[1], Bauyrzhan Shokanov[2]*, Lyazzat Kaparova[1]*, and Elubayeva Dina[1]*
[1]K.Zhubanov Aktobe Regional University, Kazakhstan, [2]Nazarbayev Intellectual Schools, Kazakhstan

OS5-2
14:20~14:40

Internet of Things attack and security analysis

Aigul Adamova[1] and Tamara Zhukabayeva[2]
[1]Astana IT University, Kazakhstan, [2]L. N. Gumilev Eurasian National University, Kazakhstan

OS5-3
14:40~15:00

IoT watering robot in technologies of variable irrigation rationing in precision agriculture

Madina Mansurova[1]*, Baurzhan Belgybaev[1], Yerlan Zaitin[1], and Askhat Asset[2]
[1]Al-Farabi Kazakh National University, Kazakhstan, [2]Almaty University of Power Engineering and Telecommunications, Kazakhstan

OS5-4
15:00~15:20

Cache Replacement Policy for Approximate Computing in Many Core Systems

Juhee Choi
Sangmyung University, Korea

Oral Session 6

16:20~18:00	Wed, August 23, 2023

Room : A428

Chair: Assel Mukasheva (AUPET, Kazakhstan)

OS6-1
16:20~16:40

ANALYSIS OF CLIENT-SIDE AND SERVER-SIDE ATTACKS IN THE CONTEXT OF WEB APPLICATIONS

Adlet Smailov* and Saukhanova Zhanat
L. N. Gumilev Eurasian National University, Kazakhstan

OS6-2
16:40~17:00

Security of containers and containerization environments

Amir Abdreev* and Assel Nurusheva
L. N. Gumilev Eurasian National University, Kazakhstan

OS6-3
17:00~17:20

Research and development of two-factor authentication methods using neural networks

Temirkhan Darbek[1], Timur Umarov[2], Sabina Rakhmetulaeva[3], Zhanna Suimenbayeva[4], and Assel Mukasheva[1]
[1]Almaty University of Power Engineering and Telecommunications, Kazakhstan, [2]British Management University, Kazakhstan, [3]International IT University, Kazakhstan, [4]Satpayev University, Kazakhstan, [5]Almaty University of Power Engineering and Telecommunications, Kazakhstan

OS6-4
17:20~17:40

Design and Implementation of an Electronic Voting System Using the IBM Blockchain Platform

Tolegen Aydynov*, Olzhas Sabiev, and Dina Satybaldina
L. N. Gumilev Eurasian National University, Kazakhstan

OS6-5
17:40~18:00

Study of Network Virtualization Security in Public Network

Junwon Lee[1] and Juhee Choi[2]*
[1]Samsung SDS, Korea, [2]Sangmyung University, Korea

OS6-6
18:00~18:20

Developing An Attack Detection Algorithm Model and Compared with The K-Means Algorithm

Uyangaa. Kh[1,2], Odonchimeg. L[1], Dashdorj. Ya[1]*, Liji Wu[2], and Heemin Park[3]
[1]Mongolian University of Science and Technology, Mongolia, [2]Tsinghua University, China, [3]Sangmyung University, Korea

Oral Session 7

16:20~18:00	Wed, August 23, 2023

Room : A432

Chair: Jung-Ju Kim (Hoseo University, Korea)

OS7-1 **Development of mobile application for copper wire molten mark classification**
16:20~16:40 Seong-jun Hong*, Dong-hyun Tae, and Jin-sik Lee
Korea Electrical Safety Corporation Electrical Safety Research Institute, Korea

OS7-2 **Isolated control circuit design for heater power supply of high-power magnetron**
16:40~17:00 Hyun-Bin Jo and Hong-Je Ryoo
Chung-Ang University, Korea

Oral Session 8

OS8-1
16:20~16:40

Simulation of computer vision systems with artificial intelligence

Perizat Rakhmetova[1]*, Makabbat Zhamuratova[1], Vinera Baiturganova[1], Beibit Shingissov[2], Laura Tasbolatova[2], and Symbat Akparova[3]

[1]Satbayev University, Kazakhstan, [2]Academy of Logistics and Transport, Kazakhstan, [3]Ultra ALM, Kazakhstan

OS8-2
16:40~17:00

Integration of Penalty Functions and Performance Criteria for Enhanced Optimization in Optimal Control Problems using Artificial Immune System Algorithms

Olga Shiryayeva[1]*, Timur Samigulin[2], and Dmirtyi Panchenko[1]

[1]Satbayev University, IICT, Kazakhstan, [2]Kazakh-British Technical University, Kazakhstan

OS8-3
17:00~17:20

A Comparative Study on One-Class Classification Based Autoencoder Models for Anomaly Detection in Brake Operating Units

Inki Kim, Jeong Won Kang, and Jeonghwan Gwak*

Korea National University of Transportation, Korea

OS8-4
17:20~17:40

Advancement in Rail Defect Detection Using YOLO-NAS: A Neural Architecture Search Approach

Namjung Kim, Junhwi Park, Jeong Won Kang, and Jeonghwan Gwak*

Korea National University of Transportation, Korea

Oral Session 9

16:20~18:00	Wed, August 23, 2023

Room : A435

Chair: Won Sik Moon (Soongsil University, Korea)

OS9-1
16:20~16:40
A Neural Network Based Approach for Disease Prediction Using Symptom Data: Uncovering Hidden Relationships and Improving Diagnostic Accuracy

Zoljargal Jargalsaikhan[1], Zolzaya Dashdorj[1]*, Stanislav Grigorev[2], Tae-Koo Kang[3], Munguntsatsral Dovdondash[1], and Erdenebaatar Altangerel[1]

[1]*Mongolian University of Science and Technology, Mongolia, *[2]*Irkutsk National Research Technical University, Russia, *[3]*Sangmyung university, Korea*

OS9-2
16:40~17:00
System of Intelligent Control of Processes of Development and Harmonization of Standards in the Field of Military and Space Activities on the Basis of Ontological Engineering

Anar Utegenova[1,2], Gulnaz Yermoldina[2], Zhanna Suimenbayeva[1,3]*, Alisher Aden[1,3], and Vitaliy Naumenko[3,4]

[1]*Almaty University of Power Engineering and Telecommunications, Kazakhstan, *[2]*Institute of Information and Computational Technologies, Kazakhstan, *[3]*INT-SAT Alatau LLP, Kazakhstan, *[4]*International University of Information Technology, Kazakhstan*

Oral Session 10

16:20~18:00	Wed, August 23, 2023

Room : A437

Chair: Juhee Choi (Sangmyung university, Korea)

OS10-1
16:20~16:40
Algorithms of Methodology for Applying Augmented Reality in Teaching Physics
Beken Arymbekov
Al-Farabi Kazakh National University, Kazakhstan

OS10-2
16:40~17:00
Utilizing Plane Detection Technology based on Actual Physical Environment for Classroom Experiments
Yeji Heo, Woojeong Shim, and Juhee Choi*
Sangmyung university, Korea

OS10-3
17:00~17:20
Cost Comparison and Analysis of VR Tracker Manufacturing with Low-cost Sensor and High value Sensor
Beomjun Cho[1], Chanhee Jang[1], Juhee Choi[1]*, and Joonyoung Kim[2]*
[1]Sangmyung university, Korea, [2]IMEC, Belgium

OS10-4
17:20~17:40
Detection and Classification of the Volatile Organic Compounds from the Petroleum and Petroleum-Derived Products Using an Electronic Nose and Machine Learning Algorithms
Olzhas Alseitov, Aliya Issainova, Dina Satybaldina*, and Assem Konyrkhanova
L. N. Gumilev Eurasian National University, Kazakhstan

OS10-5
17:40~18:00
LoRaWAN Optimization for monitoring of randomly fluctuated parameters
Kim D.K.[1]*, Turlikov A.M.[2], and Markovskaya N.V[2]
[1]Narxoz University, Kazakhstan, [2]HSE University, Russia

Oral Session 11

14:00~15:40	Thu, August 24, 2023

Room : A428

Chair: Gani Balbaev (Academy of Logistcs and Transport, Kazakhstan)

OS11-1
14:00~14:20

Enhancing Public Bus Line Classification and User Route Estimation through Deep Learning: A Comprehensive Analysis and Predictive Modeling Approach

Tsetsentsengel Munkhbayar[1], Zolzaya Dashdorj[1]*, Tae-Koo Kang[2], Tae-Koo Kang[2], Kyoung-Geun Cho[2], Taekgwon Nam[2], and Erdenebaatar Altangerel[1]

[1]*Mongolian University of Science and Technology, Mongolia,* [2]*Sangmyung University, Korea*

OS11-2
14:20~14:40

Development of Fault Diagnosis Simulator of Pneumatic Door System for Electric Railway Vehicles

Gil Hyun Kang[1], Young Min Lim[2], In Su Chung[1], and Chul Su Kim[1]*

[1]*Korea National University of Transportation, Korea,* [2]*ROTECO, Korea*

Oral Session 12

14:00~15:40	Thu, August 24, 2023

Room : A432

Chair: Seungkwon Shin (Korea Railroad Research Institute, Korea)

OS12-1 **Mathematical model for determining the orientation of a star sensor**
14:00~14:20 Kuanysh Alipbayev and Kamila Saurova*
Almaty University of Energy and Communications named after G.Daukeyev, Kazakhstan

OS12-2 **Target selection by a group of unmanned aerial vehicles based on a swarm approach**
14:20~14:40 Aigerim Mazakova[1], Vadim Zhmud[2], Sholpan Jomartova[1], and Тalgat Mazakov[1]
[1]Al-Farabi Kazakh National University, Almaty, Kazakhstan, [2]Altae-Sayan Branch of the Federal State Budgetary Institution of Science of the Geophysical Service of the RAS, Novosibirsk, Russia

OS12-3 **DEVELOPMENT OF AN ADAPTIVE DRIVE FOR AEROSPACE ENGINEERING**
14:40~15:00 Ivanov K.[1], Alipbaev K.[1]*, and Tulekenova D.[2]
[1]Almaty University of Power Engineering and Telecommunications, Kazakhstan, [2]Al-Farabi Kazakh National University, Kazakhstan

OS12-4 **Underwater robot propulsion system**
15:00~15:20 Ivanov K., Alipbayev K.*, and Saurova K.
Almaty University of Power Engineering and Telecommunications, Kazakhstan

OS12-5 **Research and design of an efficient adaptive drive with balancing friction coupling**
15:20~15:40 Konstantin Ivanov, Aidos Sultan*, Kuanysh Alipbayev, and Komekbayev Arman
Almaty University of Power Engineering and Telecommunications, Kazakhstan

Oral Session 13

14:00~15:40	Thu, August 24, 2023

Room : A434

Chair: Ainur Begimbetova (AUPET, Kazakhstan)

OS13-1
14:00~14:20
Method of predicting the service life of a linear adjustment transformer based on the analysis of operational reliability data

I.T. Utepbergenov[1]*, A.A. Tazhibayev[1,3], Ye.U. Zhumagaliyev[2], D.A. Yesengaliyev[2], and S.A. Yermetov[3]
[1]*Almaty University of Power Engineering and Telecommunications, Kazakhstan, [2]ZhubanovAktobe Regional University, Kazakhstan, [3]TrencoR&D LLP, Kazakhstan*

OS13-2
14:20~14:40
Sensorless operation of six-phase PMSM based on high-frequency signal injection with torque ripple reduction method

Seong-hoon Kim, Kwan-yuhl Cho*, Hag-wone Kim, and Sang-min Lee
Korea National University of Transportation, Korea

OS13-3
14:40~15:00
Study on the Operation Algorithm of TVPP Considering Distribution Line Constraints in Jeju Power System

Ji-Won Lee[1], Dong-Il Cho[2], Seong-Jun Park[1], Tae-Yang Nam[1], Byung-Ki Kim[3], Jae-Sun Huh[4], Nam-Gil Paik[4], Jae-Chul Kim[1], and Won-Sik Moon[1]*
[1]*Soongsil University, Korea, [2]Korea University, Korea, [3]Korea Institute of Energy Reasearch, Korea, [4]KEPCO, Korea*

OS13-4
15:00~15:20
Study of the direct and inverse problem of the thermal conductivity of a rod

Sholpan Jomartova, Тalgat Mazakov, Nurdaulet Isimov, Aigerim Mazakova, and Kalamkas Begaliyeva
Al-Farabi Kazakh National University, Kazakhstan

OS13-5
15:20~15:40
Switching Loss Analysis by Interleaving Method of 3-LV Boost Converter with Coupled Inductor

Hae In Kim, Hag Wone Kim*, Kwan Yuhl Cho, and Jeong Won Kang
Korea National University of Transportation, Korea

Oral Session 14

OS14-1
14:00~14:20
Finding trends in the development of narrow beam inter-satellite communication antennas for Cubesat satellites using patent analysis
Zh.Suimenbayeva[1,2], B.Aitchanov[1], K.Alipbayev[1]*, A.Komekbayev[1], A. Aden1, and A.Mukasheva[1]
[1]Almaty University of Power Engineering and Telecommunications, Kazakhstan, [2]Satpayev University, Kazakhstan

OS14-2
14:20~14:40
A method for improving the accuracy of navigation receivers using GPS as an example.
Khussainov Ansar and Ibraim Merey*
Almaty University of Power Engineering and Telecommunications, Kazakhstan

Poster Session 1

PS1-01 **A Study on the Partial Discharge Characteristics of VTs and CTs by Applying Repeated Impulses**
Ji Man Park, Ja Yoon Kang, Young Chae Mun, and Ga Ram Han*
Korea Electrical Safety Corporation Research Institute, Korea

PS1-02 **An Application of Terahertz Wave for Detecting Insulation Defects in 22.9kV XLPE Power Cable**
Ji-Man Park, Young-Chae Mun, and Ja-Yoon Kang*
Korea Electrical Safety Corporation Research Institute, Korea

PS1-03 **A Study on the On/off-line Framework for Asset Management of 154 kV Electrical Facilities**
Young Kyu Mo*, Min Hwang, Pil-sung Woo, Joon-Ho Son, and Youngseok Kim
Korea Electrical Safety Corporation Research Institute, Korea

PS1-04 **Design of Real-time Monitoring/Diagnosis Algorithm for Electrical Facilities**
Hoon Jung, Young-Taek Lim, Jong-Chan Lee, and Joonho Ahn*
Seoul National University, Korea

PS1-05 **Leakage Current Analysis of PCS considering the Ground System**
Dongmin Kim and Hanju Cha*
Chungnam National University, Korea

PS1-06 **Estimation of the probability of disconnection of urban electric networks in emergency situations based on the use of GIS maps**
Y.Umbetkulov*, K.Bakenov, T. Аgimov, M.Khazimov, and L.Uteshkalieva
Almaty University of Power Engineering and Telecommunication named G.Daukeev, Kazakhstan

PS1-07 **A Study on Common Mode Effects According to Battery Rack Configurations in Energy Storage Systems**
Yong-Eun Choi, Hyo-Seok Oh, Byung-Min Moon, Chin-Young Chang, and Jae-Moon Kim*
Korea National University of Transportation, Korea

PS1-08   **Development of 48V PbC Hybrid Battery for Electric Forklift Using High Quality Activated Carbon**

Hoon Seo[1], In Seok Seo[1], Hyon-ok Lim[1], and Kyung-Wan Koo[2]*
[1]DongYoung Ind. Co. Ltd., KOREA, [2]HoSeo University, KOREA

PS1-09   **Experimental studies of a model of a dusted flow air heater for the development of a new hot-water boiler**

Otynchiyeva, M. T.[1], Bakhtyar B.T.[2]*, Korobkov M.S.[3], and Tursunbayeva G.U.[2]
[1]Narxoz University, Kazakhstan, [2]S.Seifullin Kazakh Agro Technical Research University, Kazakhstan, [3]Almaty University of Power Engineering and Telecommunications, Kazakhstan

PS1-10   **Comparison of VARC DC Interrupting Module Topologies for Enhancing Superconducting VARC DCCB**

Daeseong Jang and Hyosang Choi*
Chosun University, Korea

PS1-11   **Resonance Frequency Analysis for LC Resonant DC Circuit Breaker Design**

Jihye Kim and Hyosang Choi*
Chosun University, Korea

PS1-12   **Failure Analysis of Arc and Leakage Generation Signal in DC Line**

SoYeon Han, SuChul Bang, SungIn Jeong, and YongHo Yoon*
Gwangju University, Korea

PS1-13   **Detection of Leakage Current Occurrence Location of LVDC Lines through Level-Shift Signal Processing**

Su-Chul Bang, So-Yeon Han, Sung-In Jeong, and Yong-Ho Yoon*
Gwangju University, Korea

PS1-14   **Using IoT technologies to prevent fires**

Akyltay Burgegulov[1], Gulzat Ziyatbekova[1,3]*, Talgat Mazakov[1,3]*, Aigerim Sametova[1,2]*, and Magzhan Aliaskar[1]*
[1]Al-Farabi Kazakh National University, Kazakhstan, [2]Almaty University of Power Engineering and Telecommunications, Kazakhstan, [3]Institute of Information and Computational Technologies, Kazakhstan

PS1-15   **Implementation of Real-time Water Quality Monitoring for Energy Consumption Optimization Utilizing IoT Sensors in a Smart Fish Farm**

Hunseo Lee[1], Eunsu Jung[1], Juhyeon Youk[1], June-young Park[2], Hyun-il Kang[1], and Young Park[1]*
[1]Hanbat National University, Korea, [2]CNC Aid Co., Ltd., Korea

PS1-16   **Implementation of IoT-based smart elevator remote regeneration control monitoring system platform**

Hyeong Ju Kwon, Hag-wone Kim, and Sang-min Lee*
Korea National University of Transportation, Korea

PS1-17   **An ontological model for automating the process of preparing electronic courses in the field of information and communication technologies.**
N.ZH. SABITOVA[1], B.Sh. RAZAKHOVA[1], and S.O. GNATYUK[2]
[1]L. N. Gumilyov Eurasian National University, Kazakhstan, [2]National Aviational University, Ukraina

PS1-18   **A Study of Deep Learning Model for Color Measuring Process in Industrial Facilities**
Kyung Suk Kim[1], Sanghun Lee[2], Ki-Sub Kim[1]*, and Jeong Won Kang[1]*
[1]Korea National University of Transportation, Korea, [2]Central Research Institute, KCC, Korea

PS1-19   **Research and development of an automated installation based on modern technology to determine the degree of ambient air pollution**
Madina Yessimkhanovna Mansurova[1], Samal Beksultanovna Abdreshova[1], Sandugash Kudaibergenovna Orazalieva[2], and Gulmira Nurlankyzy Abdreshova[1]
[1]Al-Farabi Kazakh National University, Kazakhstan, [2]Almaty University of Power Engineering and Telecommunications, Kazakhstan

PS1-20   **Data mining of leading indicators**
Laura Alimbayeva[1] and Kuralay Belgibayeva[2]
[1]Author One's Affiliation: Al-Farabi Kazakh National University, Kazakhstan, [2]Author Two's Affiliation: Kazakh University of Technology and Business, Kazakhstan

PS1-21   **Data-Driven Enhanced Travel Planning by Utilizing Real-Time User Data**
Sooah Park and Juhee Choi*
Sangmyung University, Korea

PS1-22   **A Study on Reuse Policy for Worn-out Cells in Non-Volatile Memories**
Juhee Choi and Seonuck Paek*
Sangmyung University, Korea

PS1-23   **Development of an analytical computation system and its application for automation of equations derivation in robotics systems**
Magzhan Aliaskar[1], Sholpan Jomartova[1]*, Aigerim Mazakova[1]*, Talgat Mazakov[1]*, and Gulzat Ziyatbekova[1,2]*
[1]Al-Farabi Kazakh National University, Kazakhstan, [2]Institute of Information and Computational Technologies, Kazakhstan

PS1-24   **MATHEMATICAL MODELING AND DEVELOPMENT OF AUTOMATED FIRE MONITORING SYSTEM**
A.A. Sametova[1,2]*, T.Zh. Mazakov[1,3], G.Z. Ziyatbekova[1,3], and A.D. Burgegulov[1]
[1]Al-Farabi Kazakh National University, Kazakhstan, [2]Almaty University of Power Engineering and Telecommunications, Kazakhstan, [3]Institute of Information and Computational Technologies, Kazakhstan

PS1-25   **Phased Array Ultrasonic Inspection Model for High-speed Train Wheels**
Jae Hwan Cha, Cheol Su Kim*, Jeong Hyung Kang*, and Kyung Suk Kim*
Korea Railroad Corporation, Korea

PS1-26   ICT Convergence Roof Installation Solar Location Tracking Solar Power Generation
System
DeokGun Woo[1]*, HyoJai Lee[1], and ChoonWon Seo[2]
[1]Korea-polytechnics, Korea, [2]Neo Solartec Inc., Korea

PS1-27   Study on the collapsing of artificial retaining wall facility using acoustic emission
Kwang Bok Kim[1], Bong Ki Kim[1], Woon Kyung Kim[1], Tae Hun Kim[1], Sung Hun Park[1],
Saurabh Kumar[1], Jun Gil Kang[1], and Kyung-Wan Koo[2]*
[1]Integrity Diagnostic Korea Co. Ltd., Republic of Korea, [2]Hoseo University, Korea

PS1-28   Technique for the use of matching circuits in the transmit-receive path of the uav
radio control channel in conditions of icing of the antenna device
Nurbolat Ondyrbayev[1]*, Nursultan Nurzhauov[1], Anna Sutiko[2], Pavel Boikachev[2],
Katipa Chezhimbayeva[1], and Asel Yerzhan[1]
*[1]Almaty University of Power Engineering and Telecommunications, Kazakhstan, [2]Military Academy of
Belarus, Belarus*

PS1-29   Designing a special mobility (hot air balloon) communication interface
Seung-Hwan Byun[1]*, Kyung-Wan Koo[2], Mun-Sung Kim[1], and Jong-Gyu Kang[3]
[1]Daejeon University, Korea, [2]Hoseo University, Korea, [3]MetaCom Ltd., Korea

PS1-30   VLAN Network Architecture for Trains to Trains Communication
Yongjung Kim[1], Marina Asankulova[2], and Kyuhyoung Choi[1]*
[1]Seoul National University of Science and Technology, Korea, [2]LLC Tendik Audit, Kyrgyzstan

Poster Session 2

PS2-31   **A rectangular gate structure with attachable sanitary lights and human monitoring camera**

Woo-Young Kim[1], Hyung-Kon Lee[1], Young-Min Kim[2], Seung-Youn Yang[3], Jin-Tae Kim[3], Kyung-Wan, Koo[4], Min-Soo Kim[5], Tae-Ho Kim[6], Seong-Kweon Kim[6], In-Choel Jeong[7], Chang-Jun Ahn[8], and Jae-Sang Cha[8]*

[1]Boseung Electric Co., Ltd., Korea, [2]Jooyoung F&G, Korea, [3]Fivetek. Co.ltd., Korea, [4]Dongseoul University, Korea, [5]Hoseo University, Korea, [6]Seoul National University of Science and Technology, Korea, [7]SungKongHoe University, Korea, [8]Chiba University, Korea & Japan

PS2-32   **A development of IoT switching and control box application used in various power source choice and sanitary light control functions**

Woo-Young Kim[1], Hyung-Kon Lee[1], Gyewon Choi[2], Minsoo Kim[3], Tae-Ho Kim[4], Seong-Kweon Kim[4], Kyung-Wan Koo[5], In-Cheol Jeong[6], Chang-Jun Ahn[7], and Jae-sang Cha[7]*

[1]Boseung Electric Co., Ltd., Korea, [2]Sungkyunkwan University, Korea, [3]Dongseoul University, Korea, [4]Seoul National University of Science and Technology, Korea, [5]Hoseo University, Korea, [6]SungKongHoe University, Korea, [7]Chiba University, Korea & Japan

PS2-33   **On the Electrical Safety Analysis of Multi-chute Classification System for Joint Courier Logistics Base Infrastructure based STPA**

Sunwoo Hwang[1], Joouk Kim[2], and Youngmin Kim[1]*

[1]Ajou University, Korea, [2]Korea Railroad Research Institute, Korea

PS2-34   **The Remote Driving Control System Based on Telepresence for Mini-tram**

Jung-Ju Kim*, Gi-Won Kim, Jun-Seok Lee, Jae-Hun Choi, Hyung-Woo Jin, and Chan-Jong Lee

Hoseo University, Korea

PS2-35   **On the Derivation of Demand Time for Response to Variable Function Focus Camera Situation**

Min Joong Kim, Myung Sung Kim, and Young Min Kim*

Ajou University, Korea

PS2-36 **Machine-Learning based Condition Diagnosis Model of Heating, Ventilation and Air Conditioning System for Train Cars**
Juhee Choi[1], Kangwoo Nam[2], and Chul-Su Kim[2]*
[1]Sangmyung University, Korea, [2]Korea National University of Transportation, Korea

PS2-37 **A Study on Route Selection Methods of Autonomous Vehicles for Public Mobility**
Jung-Ju Kim*, Gi-Won Kim, Chan-Jong Lee, Jun-Seok Lee, Jae-Hun Choi, and Hyung-Woo Jin
Hoseo University, Korea

PS2-38 **A Model for Implementing Network-Connected Systems to Train Control Systems**
Gyuoyoung YEON[1], Jaeho LEE[2], and Jongwoo LEE[1]*
[1]Korea National University of Transportation, Korea, [2]Korea Railroad Research Institute, Korea

PS2-39 **A Study on Transient Relief Methods through Characteristic Analysis of Electric Railway Vehicle Spark Gap**
Jongrok Choi, Chinyoung Chang, Jaemoon Kim, Jaeyoung Kim, and Hojun Kwon
Korea Railroad Research Institute, Korea

PS2-40 **Development of Trolley for Detection Installation Errors of Catenary System**
Chulmin PARK[1]*, Dongkue Kim[1], and Sangjin SON[2]
[1]Korea Railroad Research Institute, Korea, [2]Myeongsung Rollingstock & Plant Co. Ltd, Korea

PS2-41 **Research on the development and application of lightweight catenary poles for emergency recovery**
Ho Ryung Cho, Jong Nam Kim, Hong Kuk You, Young Jae Na, and Jae Moon Kim*
Korea National University of Transportation, Korea

PS2-42 **A Study on the Characteristics of Power System Protection System According to Regenerative Braking of Urban Railway Vehicles**
Jong Hak Park[1,2], Jeong Hyung Kang[1,3], and Seung Ho Song[1,3], Sung Cheol Han[1,2], and Jeong Won Kang[1]*
[1]Korea National University of Transportation, Korea, [2]Seoul METRO, Korea, [3]KORAIL, Korea

PS2-43 **A Study on Stabilization of Code Frequency Control Between Wayside and Onboard Signal System of AF Non-insulated Track Circuit**
Dong Hoon Park, Ho Hyun Han, Seon Kyo Kim, and Jeong Won Kang*
Korea National University of Transportation, Korea

PS2-44 **A Study on the Integrated Operation of VHF and Complex Communication Facilities**
Seon Kyo Kim, Dong Hoon Park, Ho Hyun Han, and Jeong Won Kang*
Korea National University of Transportation, Korea

PS2-45 **A Study on CBM Application of Power Capacitor for SIV in Railway Vehicles**
Hyo-Seok Oh, Yong-Eun Choi, Byung-Min Moon, Seung-Pyo Jeon, and Jae-Moon Kim*
Korea National University of Transportation, Korea

PS2-46   A Study on SoH of Lithium Polymer Battery Applied to Railway Vehicles

Hyo-Seok Oh, Yong-Eun Choi, Byung-Min Moon, Seung-Pyo Jeon, Chin-Young Chang, and Jae-Moon Kim*
Korea National University of Transportation, Korea

PS2-47   Pantograph Charging System for Electric Bus

Seungkwon Shin[1]*, Kiwon Lee[1], Hyungchul KIM[1], Rakgyo Jeong[1], and Sangryul Choi[2]
[1]*Korea Railroad Research Institute, Korea*, [2]*Induck University, Korea*

PS2-48   Preparation Analysis of the Reduction Effect the Increase Harmonic Resonance in the AC Electric Railway Feeding System

Guk Hyun Son, Tae Hoon Kim, and Jae Moon Kim*
Korea National University of Transportation, Korea

PS2-49   A Study on the Train Position Detection for the Integrity of Freight Train Based on ETCS Level 3 With GPS and 6-Axis Sensors

Seong Yong Jeon[1], Nurlan Berdigozhin[2], and Kyu Hyoung Choi[1]*
[1]*Seoul National University of Science and Technology, Korea*, [2]*Hua Xia Company, Kazakhstan*

PS2-50   An Analysis of the Changes of Regenerative Energy Utilization Facilities by the Tap Switching of Urban Railway Transformers

Chi-Myeong Yun[1], Hosung Jung[2]*, Hanmin Lee[2], and Hyungchul Kim[2]
[1]*University of Science and Technology, Korea*, [2]*Korea Railroad Research Institute, Korea*

PS2-51   A Network Architecture for A Substation Automation Based On IEC 61850

Kyungsoon Park[1], Bekzhan Rysmendeev[2], and Jongwoo LEE[1]*
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PS2-52   A Study on the LCC Analysis for High-Speed Train On-Board Signaling Systems

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Yong-Bin, Cho[1], Jin-Tae, Kim[1]*, and Thomas JW Kim[2]
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Konstantin Samsonovich Ivanov[1] and Gulmira Nurlankyzy Abdreshova[2]
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Tae Hoon Kim, Jeong Won Kang*, Haram Kim, and Ki-Sub Kim*
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Minseong Kang[1], Sangho Park[1], Kihyun Kim[2], and Kyungwan Koo[2]
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Kwang Bok Kim[1], Bong Ki Kim[1], Woon Kyung Kim[1], Tae Hun Kim[1], Sung Hun Park[1], Saurabh Kumar[1], Jun Gil Kang[1], Sang-Tae Han[2], and Kyung-Wan Koo[2]

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PS2-66　**Estimation of AIS-based ship GHGs emission using PAQman© System : focusing on Pyeongtaek·Dangiin Ports**

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