ICEF 2024

The 3rd International Conference on Electrical Facilities and information technologies 2024

"New Intelligence Technology : Past, Present and Future"

August 20(TUE) - 23(FRI), 2024

Mongolian University of Science and Technology, Ulaanbaatar, Mongolia

Hosted by THE KOREAN INSTITUE OF ELECTRICAL ENGINEERS

Organized by KOICA Korea International Cooperation Agency, МОНГОЛ УЛСЫН ШИНЖЛЭХ УХААН ТЕХНОЛОГИЙН ИХ СУРГУУЛЬ МЭДЭЭЛЭЛ, ХОЛБООНЫ ТЕХНОЛОГИЙН СУРГУУЛЬ, 상명대학교 SANGMYUNG UNIVERSITY

Supported by 국립한발대학교 HANBAT NATIONAL UNIVERSITY

Oral Session 1

KOICA session (MUST-SMU Co-research) (1)

14:00~15:40 Wed, August 21, 2024

Room : 12th floor Conference hall

Chair: Prof. Erdenebaatar Altangerel (SICT-MUST, Mongolia)

OS1-1 14:00~14:20 **A study of diabetes diagnosis using deep learning algorithms**

Anar Batkhuu[1], Sungju Lee[2], and Dolgorsuren Batjargal[1,†]

[1]School of Information and Communication Technology, MUST, Mongolia, [2]Sangmyung University, South Korea

OS1-2 14:20~14:40 **Identifying the Stages of Cystic Echinococcosis Using Machine Learning Algorithms**

Dolgorsuren Suren Batjargal[1,†], Tuvshinsaikhan Tuvshee Tegshee[1], and Sungju Lee[2]

[1]School of Information and Communication Technology, MUST, Mongolia, [2]Sangmyung University, South Korea

OS1-3 14:40~15:00 **Generative AI for Real Estate Valuation: Leveraging Geographical Area Profiles and Spatial Data**

Doljin Tsogtbayar, Enkhsuren A, Zolzaya Dashdorj[†], and Enkhtuya Bavuudorj

Mongolian University of Science and Technology, Mongolia

OS1-4 15:00~15:20 **Learning Disease Predictability Using ChatGPT and Generative AI Techniques**

Erkhbilguun Tugjargal[1], Zolzaya Dashdorj[1,†], 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, South Korea

OS1-5 15:20~15:40 **Efficient Route Planning in Mongolia: GNN-Based k-Shortest Paths through Key Geographical POIs**

Tsetsentsengel Munkhbayar, Zolzaya Dashdorj[†], Tae-Koo Kang, Orgil Jargalsaikhan, and Erdenebaatar Altangerel

Mongolian University of Science and Technology, Mongolia

Oral Session 2

KOICA session (MUST-SMU Co-research) (2)

14:00~15:20 Wed, August 21, 2024

Room : 8th floor, 804

Chair: Tuyatsetseg Badarch (SICT-MUST, Mongolia)

OS2-1 14:00~14:20 **Resource Allocation for D2D Communications Underlay Cellular Networks Based on Deep Reinforcement Learning**

Buyankhishig Ulziinyam[1], Otgonbayar Bataa[1,†], and Dae-Ki Hong[2,†]
[1]Mongolian University of Science and Technology, Mongolia, [2]Sangmyung University, South Korea

OS2-2 14:20~14:40 **Determining Sex Through EEG Analysis in Video Tasks**

Tengis Tserendondog[†]
Mongolian University of Science and Technology, Mongolia

OS2-3 14:40~15:00 **Efficient Euclidean Distance Computation for Smart Vehicle ADAS**

Gordon Cichon[1], Tseren-Onolt Ishdorj[1,†], Choisuren Ragchaabazar[1], Hyun-chul Kim[2], and Seonuck Paeck[2]
[1]Mongolian University of Science and Technology, Mongolia, [2]Sangmyung University, South Korea

OS2-4 15:00~15:20 **A Study on Efficient Methods for Normalizing Transliterated Social Media Text**

Ulziibayar Sonom-Ochir[1,†], Zolzaya Byambadorj[1,†], Altangerel Ayush[1], Munkhsukh Enkhbayar[1], and Hyun-chul Kim[2]
[1]Mongolian University of Science and Technology, SICT, Ulaanbaatar, Mongolia, [2]Sangmyung University, Korea

Oral Session 3

Future Electric Facility Planning and Operations (1)

14:00~15:20 Wed, August 21, 2024

Room : 8th floor, 805

Chair: Bat-Erdene Byambasuren (PES-MUST, Mongolia)

OS3-1 *14:00~14:20*
Fault Detection and Classification in Hybrid AC/DC Microgrid Using Discrete Wavelet Transform
Ahmed Abdelmaksoud, Shehzad Alamgir, Gwang-su Shin, and Chul-Hwan Kim†
Sungkyunkwan University, Korea

OS3-2 *14:20~14:40*
A Machine Learning Based Fault Detection and Classification Technique for Hybrid AC/DC Network
Shehzad Alamgir, Chul-Hwan Kim†, Ahmed Abdelmaksoud, Arif Mehdi, and Ho-Young Kim
Sungkyunkwan University, Korea

OS3-3 *14:40~15:00*
Analysis of Surge Current Distribution of Low-voltage Circuit Inside Wind Turbine Due to a Lightning Strike
Tserensambuu Chinges Chinges†
Mongolian University of Science and Technology, Mongolia

OS3-4 *15:00~15:20*
Developing Methodology For Assessing With Parameters In The Normal And Emergency Modes For The State Of Electrical Equipment
Adarsuren Adaraa Sukhbaatar†
Mongolian University of Science and Technology, Mongolia

Oral Session 4

Artificial Intelligence (1)

14:00~15:40 Wed, August 21, 2024

Room : 8th floor, 801

Chair: Zolzaya Dashdorj (SICT-MUST, Mongolia)

OS4-1 *14:00~14:20*
Predicting Student Graduation Using Classification Algorithms on a Mongolian University Dataset
Bilguun Soninbayar† and Min-young Ra
Mongolia International University, Mongolia

OS4-2 *14:20~14:40*
Development of Pediatric Pneumonia Screening System Using Respiration Sound by Digital Stethoscope
Sumiyakhand Dagdanpurev†,[1], Burenzaya Makhbal[1], Amartuvshin Renchin-Ochir[1,†], Gerelmaa Byambatsogt[1], and Munkhzaya Dagdanpurev[2]
[1]School of Information Technology and Electronics, National University, Mongolia, [2]Mongolian National University of Medical Sciences, Mongolia

OS4-3 *14:40~15:00*
DEEP LEARNING BASED ENGLISH MONGOLIAN NEURAL MACHINE TRANSLATION
Chuluuntsetseg Damiran†,[1], Tuyatsetseg Badarch[2]
[1]Railway Institute of Mongolia, Mongolian University of Science and Technology,Mongolia, [2]Mongolian University of Science and Technology, Mongolia

OS4-4 *15:00~15:20*
Time-Mixing and Self-Attention Techniques for Enhanced Partial Discharge Data Analysis
Changjoon Park, Namjung Kim, Junhwi Park, Jeong Won Kang, and Jeonghwan†
Korea National University of Transportation, Korea

OS4-5 *15:20~15:40*
Enhancing Partial Discharge Classification through Multimodal Feature Attention Mechanism
Namjung Kim, Changjoon Park, Junhwi Park, Jeong Won Kang, and Jeonghwan Gwak†
Korea National University of Transportation, Korea

Oral Session 5

Smart Electric Facility & Material Science and Technology

16:20~18:00 Wed, August 21, 2024

Room : 8th floor, 804

Chair: Batgerel Tumurbaatar (PES-MUST, Mongolia)

OS5-1 *16:20~16:40*

Demand side management adaptation of power deficit system

Munklhtuya Erdenebat[1], Zagdkhorol Bayasgalan[†,1], Munkh-Erdene Oyundelger[2], and Tsetsgee Bayasgalan[†,1]

[1]Mongolian University of Science and Technology, Mongolia, [2]National Dispatching Center, Mongolia

OS5-2 *16:40~17:00*

Comparative study of embedded system for energy efficient office using image processing

Oyun-Erdene Mandakh[†] and Byambasuren Bat-Erdene[†]

Power Engineering School, MUST, Mongolia

OS5-3 *17:00~17:20*

Optimization of Uncertainties Through a Mathematical Programming Model of Virtual Power Plant

Tugsbus Gankhuyag[1], Gankhuleg Majig[†,2], and Mungunshagai Gansukh[2]

[1]Seoul National University, Korea, [2]Mongolian University of Science and Technology, Mongolia

OS5-4 *17:20~17:40*

DEFECT ANALYSIS OF BORIDE COATINGS AND DEVELOPMENT OF ON THEIR BASIS EFFECTIVE WAYS TO REDUCE BRITTLENESS

Ivan Polyansky[†] and Igor Sizov

East Siberia State University of Technology and Management, Russian Federation

OS5-5 *17:40~18:00*

CONVOLUTIONAL NEURAL NETWORK IN METALLOGRAPHIC ANALYSIS OF CARBON STEELS

Konstantin Korobkov[†,1], Mosorov Vladimir[1], and Omoontsoo Galaa[2]

[1]East Siberia State University of Technology and Management, Russian Federation, [2]Mongolian University of Science and Technology, Mongolia

Oral Session 6

Future Electric Facility Planning and Operations (2)

16:20~18:00 Wed, August 21, 2024

Room : 8th floor, 805

Chair: Nyambayar Baatar (PES-MUST, Mongolia)

OS6-1 16:20~16:40
Study on Ancillary Services for HVDC's Dispatching Control of Transit Flow
Zagdkhorol Bayasgalan[1,†], Tsetsgee Bayasgalan[1,†], Munkh-Ulzii Bayar[2], and Batzaya Bat-Ochir[1]
[1]Mongolian University of Science and Technology, Mongolia, [2]National Energy Center, Mongolia

OS6-2 16:40~17:00
A way of solving the problem of heat supply to Centralized rural areas considering to climate zones of Mongolia
Mangaljalav Chimed[†], Munkhtuya Erdenebat, and Chimed Orshuu[†]
Mongolian University of Science and Technology, Mongolia

OS6-3 17:00~17:20
Assessment of wind energy resources for selecting sites for large scale wind power plant
Munkhtuya Erdenebat[†], Mangaljalav Chimed[†], and Chimed Orshuu
Mongolian University of Science and Technology, Mongolia

OS6-4 17:20~17:40
A methodology for maximizing the benefits of solar landfills on closed sites
Munkhtuya Erdenebat[†] and Sarangerel Khayankhyarvaa[†]
Mongolian University of Science and Technology, Mongolia

OS6-5 17:40~18:00
Novel control technique for automatic used for distributed energy resources connected to MiniGrid with synchronous generators
Erdenebat Enkhsaikhan[†]
Mongolian University of Science and Technology, Mongolia

Oral Session 7

Intelligent Transportation Technology

16:20~17:40 Wed, August 21, 2024

Room : 8th floor, 801

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

OS7-1 *16:20~16:40*
Affordable Automation: Design and Implementation of a Low-Cost Motorized Roller Ball Picking Mechanism for Robotic and Industrial Applications
Munkh-Erdene Ayurzana, Erkhembayar Gankhuyag, Altanshagai Batsaikhan, Erkhembayar Ochir, Naranbaatar Erdenesuren, and Dondogjamts Batbaatar†
Mongolian University of Science and Technology, Mongolia

OS7-2 *16:40~17:00*
Benchmarking Real-Time Object and Color Detection Methods for ABU Robocon Automatic Robot: Featuring Huskylens, Edge Impulse, and YOLO
Erkhembayar Gankhuyag, Munkh-Erdene Ayurzana, Dulguun Gerel, Adil Khuan, Naranbaatar Erdenesuren, and Dondogjamts Batbaatar†
Mongolian University of Science and Technology, Mongolia

OS7-3 *17:00~17:20*
Augmented reality-based mobile education service research
KeonDong Kim, Jaemin Bae, Jonghye Sim, and Juhee Choi†
Sangmyung University, Korea

OS7-4 *17:00~17:40*
A Study on Illegal Parking of Shared Electric Scooters Using Silhouette Data-Based Clustering: Application of DBSCAN and K-Means
Young Rae Noh and Juhee Choi†
Sangmyung University, Korea

Oral Session 8

Artificial Intelligence (2)

14:00~15:40 Thu, August 22, 2024

Room : 12th floor Conference hall

Chair: Prof. Juhee Choi (Sangmyung University, Korea)

OS8-1 14:00~14:20 **Automatic player detection and classification using YOLOv8 and Computer Vision Techniques**

Munkhbat Gantumur[†,1], Stephen Karungaru[1], Kenji Terada[1], and Altangerel Ayush[2]
[1]The University of Tokushima, Japan, [2]Mongolian University of Science and Technology, Mongolia

OS8-2 14:20~14:40 **DATA MINING IN UNIVERISTY REPUTATION: A CASE STUDY OF MONGOLIAN UNIVERSITIES**

Altanzul Altangerel[1], Nyamsuren Purevsuren[2], Erdenekhuu Norinpel[2], Chantsaldulam Ravdansuren[3,†], Purevtsogt Nugjgar[4], Myadagmaa Bazargur[5], Togtokhbuyan Lkhagvasuren[3], Tamir Khujuu[6], and Orgil Jargalsaikhan[2]
[1]Monglian Univ. of Life Sciences, [2]MUST, [3]Monglian Univ. of Life Sciences, [4]National Univ. of Mongolia, [5]Mongolian National Council for Education Accreditation, [6]Mongolian National University of Education, Mongolia

OS8-3 14:40~15:00 **Detection of Players on a Soccer Team using YOLOv8 and Unsupervised methods**

Namjildorj Batbaatar[1], Stephen Karungaru[1], Kenji Terada[1], and Altangerel Ayush[2]
[1]The University of Tokushima, Japan, [2]Mongolian University of Science and Technology, Mongolia

OS8-4 15:00~15:20 **Comparative Analysis of Classification Algorithms using WEKA on Cardiovascular Disease Dataset**

Otgonchuluu Bayarsaikhan[†] and Minyoung Ra
Mongolia International University, Mongolia

OS8-5 15:20~15:40 **Digital transformation and artificial intelligence**

Ariunaa Tsogbadrakh[†]
School of Information and Communication Technology, Mongolia

Oral Session 9

Artificial Intelligence (3)

14:00~15:40 Thu, August 22, 2024

Room : 8th floor, 804

Chair: Prof. Jeonghwan Gwak (Korea National University of Transportation, Korea)

OS9-1 *14:00~14:20*
Enhanced Object Detection for Railway Component Safety Using the YOLO-World Model
Junhwi Park, Changjoon Park, Namjung Kim, Jeong Won Kang, and Jeonghwan Gwak†
Korea National University of Transportation, Korea

OS9-2 *14:20~14:40*
Condition-Based Diffusion Model for Detecting Anomalies in Railway Components
Jeonghwan Gwak†
Korea National University of Transportation, Korea

OS9-3 *14:40~15:00*
Distillation-Based Approach for Efficient Machine Unlearning in Anomaly Detection
Sharjeel Masood and Jeonghwan Gwak†
Korea National University of Transportation, Korea

OS9-4 *15:00~15:20*
Enhanced Analysis of Phase Resolved Partial Discharge Data Using DeepViT with Kolmogorov–Arnold Networks
Xufeng Hu, Sharjeel Masood, and Jeonghwan Gwak†
Korea National University of Transportation, Korea

OS9-5 *15:20~15:40*
Optimized Hybrid TransUNet for Enhanced Brain Tumor Segmentation
Saeed Ahmad and Jeonghwan Gwak†
Korea National University of Transportation, Korea

Oral Session 10

Information Communication Technology (1)

14:00~15:00 Thu, August 22, 2024

Room : 8th floor, 805

Chair: Ganbold Shagdar (SICT-MUST, Mongolia)

OS10-1 **URL malware detection**

14:00~14:20

DAVAADORJ Natsagdorj[1], MUNKHBAYAR Bat-Erdene[1,†], DENSMAA Batbayar[1], BYAMBADORJ Dondogmegd[1], and JUHEE Choi[2]
[1]Mongolian University of Science and Technology, Mongolia, [2]Sangmyung University, Korea

OS10-2 **Analysis of Transient Overvoltage Level of Low-voltage Circuit Inside Wind Turbine Due to a Lightning Strike**

14:20~14:40

Chinges Tserensambuu[†]
Mongolian University of Science and Technology, Mongolia

OS10-3 **RESEARCH ON BIO SIGNAL SIMULATOR**

14:40~15:00

Otgonsaikan Yalalt† and Byambasuren Bat-Erdene[†]
Power Engineering School, MUST, Mongolia

Oral Session 11

Information Communication Technology (2)

14:00~15:20 Thu, August 22, 2024

Room : 8th floor, 801

Chair: Dashdorj Yamkhin (SICT-MUST, Mongolia)

OS11-1 14:00~14:20 **Some deployment issues for 5G network based on 4G LTE**

Bayarmaa Ragchaa† and Otgonbayar Bataa
School of Information and Communication Technology, MUST, Mongolia

OS11-2 14:20~14:40 **A Low-power LNA Design for Optical Communication Systems**

Asyeli Khuanbyek[1,†], and Ali Tangel[2]
[1]Kocaeli University, Institute of Science and Technology, Türkiye, [2]Kocaeli University, Türkiye

OS11-3 14:40~15:00 **Hybrid Free Space Optics(FSO) Communication Networks for 6G Connectivity and Backhauling**

dolgorsuren dulamjav†
Mongolian University of Science and Technology, Mongolia

OS11-4 15:00~15:20 **Hybrid Network Architecture and Design of Terrestrial and Satellite Networks, Its Reliability for Mongolia**

Otgonbaatar Yura[1], Buyankhishig Zundui[†,2], and Ganbold Shagdar[†,2]
[1]Huree university of Information and Communication Technology, Mongolia, [2]Mongolian University of Science and Technology, Mongolia

Oral Session 12

Building Integrated Photovoltaic System

14:00~16:00 Thu, August 22, 2024

Room : 4th floor, 404

Chair: Prof. KIM SUNGJIN (Hanbat National University, Korea)
Prof. KIM MINA (Hanbat National University, Korea)

OS12-1 14:00~14:20 **Impact of energy policies implemented in Mongolia on the economic efficiency of hybrid solar systems**
Mungunshagai Gansukh† and Ganskhuleg Majig
Mongolian University of Science and Technology, Mongolia

OS12-2 14:20~14:40 **A study on passive filter control to improve voltage stability in distribution network based on OpenDSS**
Byungchan Yoo and Seungmin Jung†
Hanbat National University, Korea

OS12-3 14:40~15:00 **Simple three-phase Nine-level Inverter for High Voltage Applications**
Dohyeon Kim and Jungmin Kwon†
Hanbat National University, Korea

OS12-4 15:00~15:20 **Transparent Solar Cells and Thermo-Electric Power Generation**
Joondong Kim[1,†], Malkeshkumar Patel[1], and Donggun Lim[2,†]
[1]Incheon National University, Korea, [2]Korea National University of Transportation, Korea

OS12-5 15:20~15:40 **Comprehensive review and generation analysis on rooftop-installed photovoltaics systems for residential buildings in South Korea**
RUDA LEE, ONGHO YOON†, and DONGSU KIM
Hanbat National University, Korea

OS12-6 15:40~16:00 **BIM Application Methods in the Panelization and Production Stages of Free-form Concrete Exterior**
Kyeongtae Jeong, Hojeong Jeong, Sungjin Kim, and Donghoon Lee†
Hanbat National University, Korea

Poster Session 1

12:00~13:00 Thu, August 22, 2024

Room : Conference Hall Floor

Chair: Prof. CHANG SEUNG JIN (Hanbat National University, Korea)

PS1-01 Uncertainty analysis of occupancy feature distribution in office building energy usage

Eunho Kang, Dongsu Kim, and Jongho Yoon†

Hanbat National University, Korea

PS1-02 Comprehensive investigation of building-integrated photovoltaic (BIPV) features for apartment applications based on practical architectural drawings and power generation

Minjoo Choi, Hyomun Lee, Dongsu Kim†, and Jongho Yoon

Hanbat National University, Korea

PS1-03 Online Monitoring for Power Cable Using Reflectometry

Hyun-Mo Seong, Chang Hyeon Hong, Jae-Hyun Ryu, and Seung Jin Chang†

Hanbat National University, Korea

PS1-04 Dual gas sensing platform based on TPU nanofiber substrate

Seokhun Kwon, Hunseo Lee, Young Park, and Hyunil Kang†

Hanbat National University, Korea

PS1-05 Characteristics Analysis of Color Glass for BIPV manufactured using R.F Magnetron Sputtering Method

Seungcheol Yoo and Wonseok Choi†

Hanbat National University, Korea

PS1-06 A Study on Coordinated Control for Voltage Stabilization in Distribution Systems

Wonna Choi and Seungmin Jung†

Hanbat National University, Korea

PS1-07 Assessing the effectiveness of implementing IoT-based double skin systems in improving thermal comfort

JUNYOUNG LEE[1], HAYOUNG KIM[1], CHAEYOUNG KIM[1], MYUNGHWAN OH[2], DUCJIN OH[3], JONGHO YOON[1], and DONGSU KIM[1,†]

[1]Hanbat National University, Korea, [2]Korea Conformity Laboratories, Korea, [3]Yujin System, Korea

PS1-08 **Basic Study of Digital Twin-based Construction Mobile Robots Scan-to-Metaverse System Development**
Hojeong Jeong and Sungjin Kim†
Hanbat National University, Korea

PS1-09 **Analysis of Influencing Factors for Comprehensive BIM Adoption Using System Dynamics Method**
Chaeyeon Yu and Sungjin Kim†
Hanbat National University, Korea

PS1-10 **Development of Renewable Energy Microgrid-Based Smart Fish Farm and Data-Driven Operation Technology**
Hunseo Lee, Seokhun Kwon, Hyun-Il Kang, and Young Park†
Hanbat National University, Korea

PS1-11 **Synthesis and Electrochemical Properties of Carbon Nanowalls and Nanofibers for Lithium-Ion Batteries**
Kangmin Kim, Seungcheol Yoo, Hunseo Lee, Wonseok Choi†, and Seokhun Kwon
Hanbat National University, Korea

PS1-12 **High-Efficiency Mobile Robots Battery Charger**
Dayeong Hyeon and Jungmin Kwon†
Hanbat National University, Korea

PS1-13 **Torque ripple and exciting force analysis according to the permanent magnet magnetization direction of a 300W air conditioning BLAC motor**
JANG HONGJAE and KIM KICHAN†
Hanbat National University, Korea

PS1-14 **Establishment and visualization of a data-connected 3D high-dimensional analysis system based on a predictive model for BIPV power generation performance evaluate**
Kwanghyun Song, Eunho Kang, Jongho Yoon, and Dongsu Kim†
Hanbat National University, Korea

PS1-15 **Artificial Neural Network-Based Glare Prediction Control for Optimal Control of Electrochromic Windows (ECWs)**
YoungHun Seo, EunHo Kang, SeongJu Lee, JongHo Yoon, and DongSu Kim†
Hanbat National University, Korea

PS1-16 **Analysis and Performance Evaluation of Cooling Energy Efficiency with the Application of PMV Prediction-based Setpoint Control Strategy**
Lee Seong ju[1], Kang Eun ho[1], Park Jae sung[2], Jung Seong young[2], Park Jae sung[3], and Kim Dong su[1,†]
[1]Hanbat National University, Korea, [2]Korea Conformity Laboratories(KCL), Korea, [3]NeoGS, Korea

Poster Session 2

15:30~16:30 Thu, August 22, 2024

Room : Conference Hall Floor

Chair: Prof. Jae-Moon Kim (KNUT, Korea)
Dolgorsuren Batjargal (SICT-MUST, Mongolia)

PS2-17 Research on the Current Inequality in the Circuit Breaker
Han Baek Chung, Kyu Ho Lee, Woo Jin Park, and Kil Young Ahn†
R&D Tech. Center, Korea

PS2-18 Analysis of electrochemical properties of NMC battery separator for ESS
KIM Ji-Yeon†, Choi Sang-Jae, Jeon Ju-Hyeon, Lee Geon-Ho, and Shong Kil-Mok
Korea Electrical Safety Corporation, Research Institute, Korea

PS2-19 A Study on the Impact of CMV on Photovoltaics-Linked ESS Facilities
Yong-Eun Choi, Jae-Moon Kim†, and Chin-Young Chang
Korea National University of Transportation, Korea

PS2-20 Improve Energy Storage System safety using Cell balancing
Su-Chul Bang[1], Yong-Ho Yoon[1,†], Jun-Ho Jeong[2], Yoon-Seop So[2], and Suk Chon[3]
[1]Gwangju University, Korea, [2]SM Electronics, Korea, [3]GRIDA ENERGY CO., LTD, Korea

PS2-21 A study on the conceptual framework of Digital Twin based safety diagnosis for Li-Battery Energy Storage System
KIM YOUNA†
Electrical Safety Research Institute, Korea

PS2-22 Modeling of the LTO(Lithium Titan Oxide) Battery for Energy Storage System
ILSONG KIM†
Korea National University of Transportation, Korea

PS2-23 Development Mathematical Models for Low Potential Water Heat Exchange
Chimed Orshuu†, Munkhtuya Erdenebat, and Mangaljalav Chimed†
MUST, Mongolia

PS2-24 Development Mathematical Models for Low Potential Water Heat Exchange
Mangaljalav Chimed and Chimed Orshuu†
Mongolian University of Science and Technology, Mongolia

PS2-25 **A Way of Solving the Problem of Heat Supply to Centralized Rural Areas Considering to Climate Zones of Mongolia**
Mangaljalav Chimed, Chimed Orshuu†, and Munkhtuya Erdenebat†
Mongolian University of Science and Technology, Mongolia

PS2-26 **Study on Test Methods for Performance Evaluation of DC Circuit Breakers**
Hyunwoo Lee, Kyu-Ho Lee, Han-Baek Chung, Woo-Jin Park, and Kil-Young Ahn†
LS ELECTRIC Co.,Ltd., Korea

PS2-27 **Comparative Performance Analysis of Hadoop and Spark for Real-time Big Data Platforms Using IoT in Electrical Facilities**
HAESAN PARK[1], Maratbek T. Gabdullin[2], Yerulan Suinullayev[3], Yelikbay Kabi[3], Jeong Won KANG[1,†], and Assel Mukasheva[2,†]
[1]Korea National University of Transportation, Korea, [2]Kazakh-British Technical University, Kazakhstan, [3]Almaty University of Power Engineering and Telecommunications, Kazakhstan

PS2-28 **Smart factory control based on OPC-UA and VLC**
JungHoon Lee†
DongSeoul University, Korea

PS2-29 **Research on the construction of an intelligent safety shutoff platform for monitoring and blocking fault currents due to short circuits**
MinUk Jeong[1], SangBo Han[2], SugHun Chang[3], DonHa Hwang[3], and TaeKue Kim[1,†]
[1]Changwon National University, Korea, [2]Kyungnam University, Korea, [3]Korea Electrotechnology Research Institute, Korea

PS2-30 **Power control method to mitigate Power coupling effect of Grid Forming Inverter**
Hanju Cha† and Tharani Upeksha Gunawardane
Chungnam National University, Korea

PS2-31 **Non-communication control algorithm between converter and inverter in solar power system**
Hae-In Kim, Hag-Wone Kim†, Jeong-Seon Yu, and Kwan-Yhul Cho
Korea National University of Transportation, Korea

15:30~16:30 Thu, August 22, 2024

Room : Conference Hall Floor

Chair: Prof. Wonseok Choi (Hanbat National University, Korea)
Prof. Batbayar Khuyagbaatar (SMET- MUST, Mongolia)

PS2-32 Generative AI-Enhanced Motion Recognition for User-Customized Online Teaching Technology Based on GPT

Zahra Batool Jaffrey[1], Kyoung-Geun Cho[1], Teak-Gwon Nam[1], Dong-Sung Pae[1], Seo-Young Won[2], Zolzaya Dashdorj[3], Erdenebaatar Altangerel[3], and Tae-Koo Kang[1,†]
[1]Sangmyung University, Korea, [2]TDI Co., Korea, [3]Mongolian University of Science and Technology, Mongolia

PS2-33 Deep Learning Model Comparison Study on Temperature Control in Electric Facilities

KYUNGSUK KIM[1], Sanghun Lee[2], and Jeong Won KANG[1,†]
[1]Korea National University of Transportation, Korea, [2]Central Research Institute, KCC, Korea

PS2-34 Development of Deep Learning Color Recognition Model for Color Measurement Processes

BO SUNG KIM[1], Sanghun Lee[2], Ki-Sub Kim Kim[1], and Jeong Won KANG[1,†]
[1]Korea National University of Transportation, Korea, [2]Central Research Institute, KCC, Korea

PS2-35 Explainable Artificial Intelligence: Principles, Techniques, and Applications

Zayabaatar Dagvatur and Baigalimaa Delgerbat[†]
Erdenet Institute of Technology, Branch of Mongolian University of Science and Technology, Mongolia

PS2-36 Balancing The Rotary Inverted Pendulum using the Machine Learning

tuvshinjargal altanbat[1,†] and Ganbat Baasantseren[2,†]
[1]Erdenet Institute of Technology, Mongolia, [2]National University of Mongolia, Mongolia

PS2-37 Safety Surveillance in Urban Rail Cars Using 5GHz Wi-Fi Video Transmission Systems

Hyunjo Ahn
Korea National University of Transportation, Korea

PS2-38 The white smoke information monitoring system using dual cameras and histogram back-projection

HongOk Kim[1], JungJu Kim[2,†], JaeHoon Choi[2], and DoYoung Jung[2]
[1]Wondang Energy, Korea, [2]Hoseo University, Korea

PS2-39 QoS based Dynamic Wavelength and Bandwidth Allocation algorithm for EPONs

Tserenlkham Batdorj, Ganbold Shagdar[†], and Buyankhishig Zundui[†]
Mongolian University of Science and Technology, Mongolia

PS2-40 Research on Protecting Personal Confidentiality of Healthcare Patients

Densmaa Densmaa Batbayar[1,†] and Javzandorj Javzandorj Byambatseveen[2,†]
[1]School of Information and Communication Technology (SICT), Mongolian University of Science & Technology, (MUST), Mongolia, [2]Mongolian National Defence University, Mongolia

PS2-41 Detection of DNS Spoofing Attack Through Network Traffic Analysis

Densmaa Densmaa Batbayat†
School of Information and Communication Technology (SICT), Mongolian University of Science & Technology (MUST), Mongolia

PS2-42 Detection of DNS Spoofing Attack Through Network Traffic Analysis

Munkhtsetseg Munkhtsetseg Erdenebulgan[1,†] and Densmaa Densmaa Batbayar[2,†]
[1]Mongolian National Defence University, Mongolia, [2]School of Information and Communication Technology (SICT), Mongolian University of Science & Technology (MUST), Mongolia

PS2-43 WEBSITE SECURITY ANALYSIS: A CASE STUDY OF A SCHOOL WEBSITE

Byambadorj Byambadorj Dondogmegd[1,†] and Munkhjatgal Munkhjargal Bayanjargal[2,†]
[1]School of Information and Communication Technology (SICT), Mongolian University of Science & Technology (MUST), Mongolia, [2]Mongolian National Defence University, Mongolia

PS2-44 Analyzing the survival effects of traditional paper tag vs. electronic triage tag sheets in emergency medical service

Dong Min Shin[1,†] and Kamoliddin Zukhriddinovich Salakhiddinov[2]
[1]Korea National University of Transportation, Korea, [2]Andijan State Medical Institute, Russia

PS2-45 Predicting Photovoltaic Power Generation Using Extraterrestrial Solar Irradiance and Historical Generation Data

HUI-SANG KIM, YUSEONG NOH, and HYUNGTAE HA†
Gachon University, Korea

PS2-46 The IoT-based plant cultivation blocks capable of multi-stage expansion and stacking

JongGil Baek[1], JungJu Kim[†,2], JaeHoon Choi[2], and DoYoung Jung[2]
[1]Bethel Solar Farm Co.,Ltd., Korea, [2]Hoseo University, Korea

PS2-47 A Study on Instruction Sets for Large Language Model based on RISC-V

Juhee Choi
Sangmyung University, Korea

Poster Session 3

16:30~17:30 Thu, August 22, 2024

Room : Conference Hall Floor

Chair: Prof. Sangyule Choi (Induk University, Korea)
Odgerel Ulziibat (MUST, Mongolia)

PS3-48 Control of train power consumption using raspberry pi - TPSpi
Hwanhee Cho† and Jaewon Kim
Korea Railroad Research Institute, Korea

PS3-49 A Study on the Development of Automatic Calibration System of CNC Machine
Don Ha Hwang[1,†] and Sang Bo Han[2,†]
[1]Korea Electrotechnology Research Institute, Korea, [2]Kyungnam University, Korea

PS3-50 Deep Reinforcement Learning for Indoor Autonomous Navigation of Mobile Robot
Seongjin Kong and Wonchang Lee†
Pukyong National University, Korea

PS3-51 Smart Construction Safety Management System Using Autonomous Mobile Robot based on Vision Sensor
JungJu Kim[1,†], JaeHoon Choi[1], DoYoung Jung[1], and MiYoung Kim[2]
[1]Hoseo University, Korea, [2]Asan City Council, Korea

PS3-52 A Study on Urban Railway Operation using Train Performance Simulator
JONG NAM KIM†, Ho Hyun Han, and Jeong Won KANG†
Korea National University of Transportation, Korea

PS3-53 A Study on the Position Control Method Based on BLDC Hall Sensor according to the Operation of the Door of the Electric Vehicle
Seung-Pyo Jeon, Yong-Eun Choi, Hyo-Seok Oh, Chin-Young Chang, and Jae-Moon Kim†
Korea National University of Transportation, Korea

PS3-54 For driving EMU electrical components High-efficiency power supply research
Sang-Nyeong Park, Jong-Hee Kim, Jun-Bum Choi, and Jae-Moon Kim†
Korea National University of Transportation, Korea

PS3-55 A Study on the Development and Application of Gate Driver for Railway Vehicle IGBT
Chi-Won Sung, Jae-Moon Kim†, Jong-Hee Kim, and Jong-Seok Choi
Korea National University of Transportation, Korea

PS3-56 **A Study on the the deviation of overhead contact wire in 2 intervals of 3 support points**
sang-woong lee, yong-eun choi, jeong-won kang†, and jae-moon kim
Korea National University of Transportation, Korea

PS3-57 **Residual Attention Guided PaDiM for Defects Segmentation in Railway Tracks**
CHANHEE WON, Inki Kim, Younghoon Jeon, Jeonghwan Gwak, and JeongWon KANG†
Korea National University of Transportation, Korea

PS3-58 **Multi-task Transfer Learning Facilitated by Segmentation and Denoising for Anomaly Detection of Rail Fasteners**
MINGYU LEE, Beomjun Kim, Younghoon Jeon, Jeonghwan Gwak, and JeongWon KANG†
Korea National University of Transportation, Korea

PS3-59 **A Study on Stabilization of Code Frequency Control Between Wayside and Onboard Signal System of AF Non-insulated Track**
JUNOH KIM, Ho-Hyun Han, Seon-Kyo Kim, and JeongWon†
Korea National University of Transportation, Korea

PS3-60 **A Study on Integrated Operation of VHF and Complex Communication Facilities for Railway**
JONGHEE Kim, Hyun Cho Ahn, Dong-Hoon Park, Ho-Hyun Han, and Jeong Won Kang†
Korea National University of Transportation, Korea

PS3-61 **Optimization of regenerative power utilization in urban power substations**
Seung-Kwon Shin[1] and Seon-mook Won[2,†]
[1]Korea Railroad Research Institute, Korea, [2]University of Science and Technology, Korea

PS3-62 **A Study on the selection of representative models of subway stations using clustering analysis techniques for energy performance evaluation of subway stations**
SEUNG KWON SHIN[1,†] and SANG YULE CHOI[2]
[1]Korea Railroad Research Institute, Korea, [2]Induck University, Korea

16:30~17:30 Thu, August 22, 2024

Room : Conference Hall Floor

Chair: Prof. Jeongju Kim (Hoseo University, Korea)
Erdenebat Tumur-Ochir (SMET-MUST, Mongolia)

PS3-63 **A study on the initial reduction of traffic signal timing for incident management**
Oh Sang-Tae and Kim Jin-tae†
Korea National University of Transportation, Korea

PS3-64 **Design of D2V Wireless Communication Message Datasets for IoT Traffic Control devices Information Provision in Autonomous Driving Environments**
Yongbin Cho1 and Jin-Tae Kim[2,†]
[1]Smart Transportation Research Laboratory, Korea, [2]Transportation System Engineering, Korea

PS3-65 BLE-based Location Recognition System of Autonomous Mobile Robots for Smart Livestock Farming

JungJu Kim[1,†], JaeHoon Choi[1], KiHyun Kim[2], and YongWoo Yang[2]
[1]Hoseo University, Korea, [2]JECT Co.,Ltd., Korea

PS3-66 A Study on Nanosensor Based on Graphene Nanoflake Transport on Graphene Nanoribbon Using Edge Vibration

NAMHYEOP KIM, Ki-Sub Kim Kim, Hyun Cho Ahn, and Jeong Won KANG[†]
Korea National University of Transportation, Korea

PS3-67 Self-assembly Synthesis of cadmium telluride nanoparticles and Nanowires

KIM TAEHOON Kim, Yeung Chan Kim, Jeong Won KANG[†], and Ki-Sub Kim Kim[†]
Korea National University of Transportation, Korea

PS3-68 Adaptive Inter Reference Distance Scheme for Worn-out Cells in Non-Volatile Memories

Juhee Choi[1], Seonuck Paek[1,†], Erdenebaatar Altangerel[2], and Munkhnasan Choinzon[2]
[1]Sangmyung University, Korea, [2]Mongolian University of Science and Technology, Mongolia

PS3-69 Ultra-High Sensitivity Interdigitated Capacitor Device for Sensor Applications

Nam Young Kim[1,†], Enkhzaya Ganbold[1], Eun Seong Kim[1], Yu Mi Kim[2], and Sang Tae Kim[2]
[1]Kwangwoon University, Korea, [2]Neuroscience Research Institute, JnPharma Inc., Korea

PS3-70 Modeling of LCL-Filter Active Damping Using MRAS Observer Without Additional Sensors

jeongseon Yu, HaeIn Kim, HagWone Kim[†], and KwanYuhl Kwan
Korea National University of Transportation, Korea

PS3-71 Study on Service Standards for Energy Management, Including Electric Vehicles

Jaehyung Lee and Jin-Tae Kim[†]
Korea National University of Transportation, Korea

PS3-72 Sales Predictions Using Data Mining: An Empirical Study in Mongolia

Sarangerel Dorjgochoo[1,†], Tumurbold Zolboo[1], and Sungju Lee[2]
[1]Mongolian University of Science and Technology, Mongolia, [2]Sangmyung University, Korea

PS3-73 Activities for the Implementation of Machine-Readable Standards in the Field of Military and Space Activities Using Ontological Engineering Methods

JEONG HYUNG KANG[1], Anar Utegenova[2], Gulnaz Yermoldina[3], Zhanna Suimenbayeva[2], Alisher Aden[2], Vitaliy Naumenko[4], and Jeong Won KANG[1,†]
[1]Korea National University of Transportation, Korea, [2]Almaty University of Power Engineering and Telecommunications Named Gumarbek Daukeev, Almaty, Kazakhstan, [3]Institute of Information and Computational Technologies, Almaty, Kazakhstan, [4]INT-SAT Alatau LLP, Almaty, Kazakhstan International University of Information Technology, Almaty, Kazakhstan

PS3-74 **Deep learning comparison study on automatic cancer nuclei segmentation on histological images**

JeongWon KANG[1,†], Maratbek T. Gabdullin[2], Assel Mukasheva[2], Dina Koishiyeva[2], Alibek Bissembayev[2], and Ki-Sub Kim[1]
[1]Korea National University of Transportation, Korea, [2]Kazakh-British Technical University, Kazakhstan

PS3-75 **Supporting Chemistry Students' Satisfaction through Physical and Virtual Labs**

Erdenebayar Eegii Lamjav[1], Batshagai Baatar[1,†], Javzansuren Jigjidsuren[1], Bayarmaa Ragchaa[1], Ariunaa Tsogbadrah[1], Munkhbat Altanbayar[1], Jinyoung Lee[2,†], Hyun-ju Kim[2], and Hee-Hwa Lee[2]
[1]Mongolian University of Science and Technology, Mongolia, [2]Sangmyung University, Cheonan, Korea

PS3-76 **Assessment of Joint Mobility and Performance in Wrestlers Using Inertial Sensors**

Batbayar Khuyagbaatar[†]
Mongolian University of Science and Technology, Mongolia

PS3-77 **Transition Metal Dichalcogenids Synthesis in Mongolia**

Khurelbaatar Zagarzusem[†]
Mongolian University of Science and Technology, Mongolia