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RESEARCH INTERESTS	Wireless Sensor Networks, Low-power and lossy Networks, Wireless Powered Communication Networks, Maritime Wireless Communication Networks, Vehicle-to-Everything (V2X) Communications, In-vehicle Networking (IVN), Blockchain, Internet of Things (IoT), Deep Learning, Reinforcement Learning

WORK EXPERIENCE	**Hallym University**, Chuncheon, Republic of Korea *Research Professor*, Smart Computing Laboratory, College of Information Science Mar. 2024 – Current **Korea Electronics Technology Institute (KETI)**, Seoul, Republic of Korea *Assistant Researcher*, Smart Network Research Center Sep. 2018 – Aug. 2019

EDUCATION	**Hallym University**, Chuncheon, Republic of Korea Integrated Master's and Ph.D. in Convergence Software Mar. 2018 – Feb. 2024 • Dissertation: Joint Resource Scheduling Schemes for Data and Energy Transmissions in Wireless Powered Sensor Networks (Advisor: Dr. Eui-Jik Kim) **Hallym University,** Chuncheon, Republic of Korea B.S. in Convergence Software Mar. 2014 – Feb. 2018

PUBLICATIONS	**International Journals** • <u>Sol-Bee Lee</u>, Jung-Hyok Kwon, Bu-Young Kim, Woo-Seong Shim, Taeshik Shon, and Eui-Jik Kim, **Slot Occupancy-Based Collision Avoidance Algorithm for Very-High-Frequency Data Exchange System Network in Maritime Internet of Things**, *Applied Sciences*, Dec. 2024. • <u>Sol-Bee Lee</u>, Jung-Hyok Kwon, Bu-Young Kim, Woo-Seong Shim, Dongwan Kim, and Eui-Jik Kim, **Block-based Self-organizing TDMA for Reliable VDES in SANETs**, *KSII Transactions on Internet and Information Systems*, Feb. 2024. • Jung-Hyok Kwon, <u>Sol-Bee Lee</u>, and Eui-Jik Kim, **Q-Learning-based Pending Zone Adjustment for Proximity Classification**, *Sensors*, Apr. 2023. • <u>Sol-Bee Lee</u>, Sam Nguyen-Xuan, Jung-Hyok Kwon, and Eui-Jik Kim, **Multiple Concurrent Slotframe Scheduling for Wireless Power Transfer-Enabled Wireless Sensor Networks**, *Sensors*, Jun. 2022. • <u>Sol-Bee Lee</u>, Jung-Hyok Kwon, and Eui-Jik Kim, **Residual Energy Estimation-Based MAC Protocol for Wireless Powered Sensor Networks**, *Sensors*, Nov. 2021. • <u>Sol-Bee Lee</u>, Jung-Hyok Kwon, Eui-Jik Kim, and Jaehoon Park, **Implementation of Integrated Electronic Health Record and Mobile Personal Health Record Datasets for Improving Healthcare Services**, *Sensors and Materials*, Aug. 2018. • Minki Cha, Jung-Hyok Kwon, <u>Sol-Bee Lee</u>, Jaehoon Park, Sungkwan Youm, and Eui-Jik Kim, **Integrated Framework for Keyword-based Text Data Collection and Analysis**, *Sensors and Materials*, Feb. 2018. • Sungmo Kim, Jung-Hyok Kwon, <u>Sol-Bee Lee</u>, Jaehoon Park, Dongwan Kim, and Eui-Jik Kim, **Energy-efficient Resource Directory Update Scheme for Constrained**

Application Protocol in Internet of Things, *Sensors and Materials*, Feb. 2018.

- Jung-Hyok Kwon, <u>Sol-Bee Lee</u>, and Eui-Jik Kim, **Group-based concurrent transmissions for spatial efficiency in IEEE 802.15. 7 visible light communications**, *Applied Mathematical Modelling*, Jan. 2018.

- Jung-Hyok Kwon, <u>Sol-Bee Lee</u>, Jaehoon Park, Kyu-Sung Hwang, Yongseok Lim, and Eui-Jik Kim, **Adaptive Resource Observation for Congestion Alleviation using Constrained Application Protocol**, *International Journal of Engineering and Technology (UAE)*, Dec. 2018.

- Jung-Hyok Kwon, <u>Sol-Bee Lee</u>, Jaehoon Park, and Eui-Jik Kim, **Association Rule-based Predictive Model for Machine Failure in Industrial Internet of Things**, *Journal of Physics: Conference Series*, May 2017.

International Conferences

- Inhyeok Kang, <u>Sol-Bee Lee</u>, Jung-Hyok Kwon, and Eui-Jik Kim, **Traffic-aware GTS Allocation Interval Determination for IEEE 802.15.4 DSME Networks**, *In Proceedings of 2024 20th IEEE International Conference on e-Science (e-Science)*, Osaka, Japan, Sep. 2024.

- <u>Sol-Bee Lee</u>, Jung-Hyok Kwon, and Eui-Jik Kim, *Q-learning-based Traffic-aware Parent Selection for Wireless Powered Sensor Networks*, *In Proceedings of 2024 6th International Conference on Artificial Intelligence in Information and Communication (ICAIIC)*, Osaka, Japan, Feb. 2024.

- <u>Sol-Bee Lee</u>, Jung-Hyok Kwon, and Eui-Jik Kim, **Impact of Slotframe Length on Performance of TSCH-based Wireless Powered Sensor Networks**, *In Proceedings of 2023 13th International Conference on Power, Energy and Electrical Engineering (CPEEE)*, Tokyo, Japan, Feb. 2023.

- Sang-Woo Lee, Jung-Hyok Kwon, <u>Sol-Bee Lee</u>, Nam Kim, Hyung Do Choi, and Eui-Jik Kim, **Comparative Study of Word Embeddings for Classification of Scientific Article on Human Health Risk of Electromagnetic Fields**, *In Proceedings of 2022 IEEE 11th Global Conference on Consumer Electronics (GCCE)*, Osaka, Japan, Oct. 2022.

- Jung-Hyok Kwon, Sang-Woo Lee, <u>Sol-Bee Lee</u>, and Eui-Jik Kim, **Impact of Correlation-based Feature Selection on Photovoltaic Power Prediction**, *In Proceedings of Technology Innovation Management and Engineering Science International Conference (TIMES-iCON) 2019*, Bangkok, Thailand, Dec. 2019.

PATENTS

Eui-Jik Kim, Jung-Hyok Kwon, <u>Sol-Bee Lee</u>, **Control Method of Server for Adjusting Determination Pending Zone of Getting On and Off based on Q-Learning**, Registration No. 1027114350000, Sep. 2024, Application No. 1020210133826, Oct. 2021.

Eui-Jik Kim, Jung-Hyok Kwon, <u>Sol-Bee Lee</u>, **Getting On/Off Management System Based on Linear Regression Analysis of Tag Receiver**, Registration No. 1027114340000, Sep. 2024, Application No. 1020210133825, Oct. 2021.

Eui-Jik Kim, <u>Sol-Bee Lee</u>, Jung-Hyok Kwon, **Apparatus and Method for Predicting Disease**, Registration No. 1020304350000, Oct. 2019, Application No. 1020170169399, Dec. 2017.

Eui-Jik Kim, <u>Sol-Bee Lee</u>, Jung-Hyok Kwon, **Traffic Load Management Apparatus and Method Based on Coordinated Application Protocol for Internet of Things Local Networks**, Registration No. 1020420270000, Nov. 2019, Application No. 1020170163340, Nov. 2017.

Eui-Jik Kim, Jung-Hyok Kwon, <u>Sol-Bee Lee</u>, **Power Transmitting Unit for Estimating Amount of Residual Energy in Each PRU based on Slot Configuration of Superframe, and Wireless Powered Sensor Networks**, Registration No. 1025857430000 Sep. 2023, Application No. 102021015689, Nov. 2021.

Eui-Jik Kim, Jung-Hyok Kwon, <u>Sol-Bee Lee</u>, **Power Transmitting Unit for Allocating Dedicated Power Slots based on Amount of Residual Energy in Each Power Receiving Unit, and Wireless Powered Sensor Networks**, Registration No. 1025857440000, Sep. 2023, Application No. 1020210156897, Nov. 2021.

Eui-Jik Kim, <u>Sol-Bee Lee</u>, Jung-Hyok Kwon, **Industrial IoT-Based Accident Prediction System and Method for Construction Site Safety**, Registration No. 1019164110000, Nov. 2018, Application No. 1020170142473, Oct. 2017.

Eui-Jik Kim, Jung-Hyok Kwon, Sung-Mo Kim, Ha-Ra Oh, <u>Sol-Bee Lee</u>, Won-Yong Ahn, **Observation Period Adjustment System and Method of CoAP Server**, Registration No. 1018252100000, Jan. 2018, Application No. 1020160114614, Sep. 2016.

Eui-Jik Kim, Jung-Hyok Kwon, <u>Sol-Bee Lee</u>, Ho-Young Kim, **Method of Data Collection Using UAV in Wireless Sensor Network and Device with This Method**, Registration No. 1019318030000, Dec. 2018, Application No. 1020170149030, Nov. 2017.

Young-Seong Kim, Yong-Seok Lim, Young-Han Kim, Yong-Ju Park, Hyun-Seuk Ahn, Seung Ok Lim, Chang-Seok Yun, <u>Sol-Bee Lee</u>, **Apparatus for Scheduling Power Transmission and Data Communication and Method Therefor**, Registration No. 1023880180000, Apr. 2022, Application No. 1020190152093, Nov. 2019.

RESEARCH PROJECTS	**Blockchain-based Vehicle Data Security Framework for Software-defined Vehicle**

Blockchain-based Vehicle Data Security Framework for Software-defined Vehicle
Principal Investigator
Supported by National Research Foundation of Korea (NRF)
May 2024 – Apr. 2027

Real-time and High-precision SWIPT Operating Platform Development using Deep Neural Network Model for ULP-IoT
Research Associate
Supported by National Research Foundation of Korea (NRF)
Mar. 2024 – Feb. 2025.

Development of IoT Convergence Pedestrian and Driver Safety Solutions using Wireless Tags and Radar
Research Associate
Supported by Korea Technology and Information Promotion Agency for SMEs (TIPA)
Jan. 2023 – Dec. 2023

A Study on Public Health and Safety in a Complex EMF Environment
Research Associate
Supported by National Research Foundation of Korea (NRF)
Feb. 2021 – Dec. 2021, Jan. 2023 – Dec. 2023

Development of Multi-source Cohesive Energy Harvesting and Ultra-Low-Power Consumption Self-Powered IoT Device Platform
Research Assistant
Supported by Korea Planning & Evaluation Institute of Industrial Technology (KEIT)
Jan. 2019 – Feb. 2019, Aug. 2019

Development of Low-power Massive MISO SWIPT for IoT Wearable Devices
Research Assistant
Supported by Korea Planning & Evaluation Institute of Industrial Technology (KEIT)
Nov. 2018 – Dec. 2018

Development of Non-binding Multimodal Wireless Power Transfer Technology for Wearable Device
Research Assistant
Supported by Korea Planning & Evaluation Institute of Industrial Technology (KEIT)
Sep. 2018 – Dec. 2018, Mar. 2019 – Aug. 2019

Study on the EMF Exposure Control in Smart Society
Research Associate

REFERENCES

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IEEE Authors: https://ieeexplore.ieee.org/author/37088230849
Linked In: https://www.linkedin.com/in/sol-bee-lee
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