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RESEARCH INTERESTS

Battery management systems
On-device machine learning
(Multi-Agent) Reinforcement learning

TECHNICAL SKILLS

Software Development

- Programming Languages: C, C++, Python, MATLAB

Hardware Development

- Circuit design (PCB schematic design)
- Knowledge of simulation tools: MATLAB Simulink

Languages

- Korean – Native
- English – Advanced

EDUCATION

Yonsei University, Seoul, Republic of Korea

Mar. 2018 – Present

Ph.D. Student in Computer Science

Mobile Embedded Systems Lab., Advised by Prof. Hojung Cha

(GPA 4.17 / 4.5)

Ewha Womans University, Seoul, Republic of Korea

Mar. 2011 – Feb. 2016

B.S in Electronic Engineering

(GPA 3.51 / 4.5)

PUBLICATIONS (SCIE JOURNALS AND INTERNATIONAL CONFERENCES)

NRF list denotes the top CS conference list from National Research Foundation of Korea.

* indicates co-primary authors

1. **Detecting Structural Anomalies of Quadcopter UAVs based on LSTM Autoencoder**,
Seunghyeok Jeon, Jaeyun Kang, **Jiwon Kim**, and Hojung Cha
Pervasive and Mobile Computing (PMC), Vol. 88, Jan. 2023.
2. **DynLiB: Maximizing Energy Availability of Hybrid Li-Ion Battery Systems**
Jiwon Kim, Sungwoo Baek, Seunghyeok Jeon, and Hojung Cha,
The ACM SIGBED International Conference on Embedded Software (EMSOFT 2022) (*IF: 2, NRF list*).
3. **PVoT: Reconfigurable Photovoltaic Array for Indoor Light Energy-powered Batteryless Devices**,
Jiwon Kim*, Eunyong Kim*, Seunghyeok Jeon, Junick Ahn, Hyungchol Jun, and Hojung Cha,
The International Conference on Hardware/Software Codesign and System Synthesis (CODES+ISSS 2022)
(*IF: 2, NRF list*).

4. **Voltage Prediction of Drone Battery Reflecting Internal Temperature**,
Jiwon Kim, Seunghyeok Jeon, Jaehyun Kim, and Hojung Cha,
The 59th Design Automation Conference (DAC 2022) (*IF: 3, NRF list*).
5. **Optrone: Maximizing Performance and Energy Resources of Drone Batteries**,
Jiwon Kim, Yonghun Choi, Seunghyeok Jeon, Jaeyun Kang, and Hojung Cha,
The ACM SIGBED International Conference on Embedded Software (EMSOFT 2020) (*IF: 2, NRF list*).
6. **Hydrone: Reconfigurable Energy Storage for UAV Applications**,
Jiwon Kim, Sungwoo Baek, Yonghun Choi, Junick Ahn, and Hojung Cha,
The International Conference on Hardware/Software Codesign and System Synthesis (CODES+ISSS 2020) (*IF: 2, NRF list*).
7. **Optimizing Discharging Efficiency of Reconfigurable Battery with Deep Reinforcement Learning**
Seunghyeok Jeon, Jiwon Kim, Junick Ahn, and Hojung Cha,
The ACM SIGBED International Conference on Embedded Software (EMSOFT 2020) (*IF: 2, NRF list*).

ORAL PRESENTATIONS

1. **DynLiB: Maximizing Energy Availability of Hybrid Li-Ion Battery Systems**
The ACM SIGBED International Conference on Embedded Software (EMSOFT 2022), Hybrid-Shanghai, Oct. 07-14, 2022.
2. **PVoT: Reconfigurable Photovoltaic Array for Indoor Light Energy-powered Batteryless Devices**,
The International Conference on Hardware/Software Codesign and System Synthesis (CODES+ISSS 2022), Hybrid-Shanghai, Oct. 07-14, 2022.
3. **Voltage Prediction of Drone Battery Reflecting Internal Temperature**,
The 59th Design Automation Conference (DAC 2022), San Francisco, USA, July 10-14, 2022.
4. **Optrone: Maximizing Performance and Energy Resources of Drone Batteries**,
The ACM SIGBED International Conference on Embedded Software (EMSOFT 2020), Virtual Conference, Sep. 20-25, 2020.
5. **Hydrone: Reconfigurable Energy Storage for UAV Applications**,
The International Conference on Hardware/Software Codesign and System Synthesis (CODES+ISSS 2020), Virtual Conference, Sep. 20-25, 2020.

PATENTS

1. S. Jeon, J. Kim, and H. Cha, "Battery Level Indicator and Method Displaying Battery Level Thereof" KR Patent No. 10-2091340, filed December 11, 2018. and issued March 13, 2020.
2. J. Kim, Y. Choi, S. Jeon, J. Kang, and H. Cha "Apparatus and Method for Providing Usable Capacity of a Battery for Drone" KR Patent No. 10-2303478 filed November 21, 2019. and issued September 13, 2021.
3. J. Kim, Y. Choi, J. Ahn, S. Jeon, and H. Cha, "Hybrid Energy Storage Device and Method for Improving Available Capacity of Drone Battery" KR Patent Application No. 10-2020-0140548, filed October 27, 2020. Patent Pending.
4. J. Kim, E. Kim, S. Jeon, J. Ahn, H. Jun, and H. Cha, "Reconfigurable Photovoltaic Array Monitoring Apparatus and Method" KR Patent Application No. 10-2021-0172113, filed December 12, 2021. Patent Pending.

ACADEMIC SERVICE

Peer Review

IEEE Transactions on Energy Conversion (TEC)

RESEARCH PROJECT EXPERIENCES

Task Relation Graph Prediction Based on RNN
AP S/W Development Team, Samsung Electronics, Republic of Korea

Mar. 2023 – Feb. 2024

Development of Energy Management Techniques for Batteryless IoT System <i>National Research Foundation of Korea, NRF, Republic of Korea</i>	Mar. 2019 – Feb. 2022
Development of Energy Optimization Techniques for Multi-cell Battery System <i>Intelligent Machine Center, Samsung Research, Republic of Korea</i>	Apr. 2019 – Dec. 2019
Development of High-Assurance (\geq EAL6) Secure Microkernel <i>Institute for Information & communications Technology Promotion (IITP), Ministry of Science and ICT, Republic of Korea</i>	Apr. 2018 – Present

AWARDS AND HONORS

Academic Research Fellowship , BK21 PLUS Yonsei Scholarship	Fall semester, 2022
Ph.D. Fellowship , National Research Foundation (NRF) of Korea	June 2020 – May 2022
Excellence Prize in Capstone Design, Dept. of Electronic Engineering, Ewha Womans University	Fall semester, 2015
Academic Excellence Scholarship , Dept of Electronic Engineering, Ewha Womans University	Fall semester, 2014
2nd Place in 2014 LES Asia-Pacific Business Plan Competition Award, Licensing Executive Society	Nov. 24, 2014
Gold Medal in 4th International Festival of Innovations, Int. Federation of Inventors' Associations (IFIA)	Apr. 24, 2014
Grand Prize (Prime Minister's Award, 1st place among 3,441 teams), in National University Invention Competition, Korean Intellectual Property Office	May 5, 2013