KIM, JIWON

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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*, Eunyeong 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 Fransisco, 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

Journal Reviewer
IEEE Transactions on Energy Conversion (TEC)   2022 – present

RESEARCH PROJECT EXPERIENCES

Task Relation Graph Prediction Based on RNN   Mar. 2023 – Feb. 2024
AP S/W Development Team, Samsung Electronics, Republic of Korea

Development of Energy Management Techniques for Batteryless IoT System   Mar. 2019 – Feb. 2022
National Research Foundation of Korea, NRF, Republic of Korea

Development of Energy Optimization Techniques for Multi-cell Battery System   Apr. 2019 – Dec. 2019
Intelligent Machine Center, Samsung Research, Republic of Korea

Development of High-Assurance (≥EAL6) Secure Microkernel   Apr. 2018 – Present
Institute for Information &communications Technology Promotion (IITP), Ministry of Science and ICT, Republic of Korea

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