SEUNGJOO LEE

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EDUCATION

KAIST (Korea Advanced Institute of Science and Technology) Sep 2024 - Present
Ph.D. in Electrical Engineering
Advised by Sung-Ju Lee

KAIST (Korea Advanced Institute of Science and Technology) Sep 2022 - Aug 2024
M.S. in Electrical Engineering
Total GPA : 4.17/4.3
Advised by Sung-Ju Lee

KAIST (Korea Advanced Institute of Science and Technology) Mar 2016 - Aug 2022
B.S. in Computer Science major
Major GPA : 4.13/4.3 | Total GPA : 4.0/4.3
Graduated with Honors (2nd place out of 715 students)
Summa Cum Laude

PUBLICATIONS

(C: Conference, D: Demo, B: Book)

[C3] **$(FL)^2$: Overcoming Few Labels in Federated Semi-Supervised Learning**
Seungjoo Lee, Thanh-Long V. Le, Jaemin Shin, Sung-Ju Lee
Conference on Neural Information Processing Systems (NeurIPS) 2024
Top ML Conference - Acceptance rate 25.8%

[C2] **FedTherapist: Mental Health Monitoring with User-Generated Linguistic Expressions on Smartphones via Federated Learning**
Jaemin Shin, Hyungjun Yoon, **Seungjoo Lee**, Sungjoon Park, Yunxin Liu, Jinho D. Choi, Sung-Ju Lee
Conference on Empirical Methods in Natural Language Processing (EMNLP Main) 2023
Top NLP Conference - Acceptance rate 21.3%

[C1] **MyDJ: Sensing Food Intakes with an Attachable on Your Eyeglass Frame**
Jaemin Shin, **Seungjoo Lee**, Taesik Gong, Hyungjun Yoon, Hyunchul Roh, Andrea Bianchi, Sung-Ju Lee
Conference on Human Factors in Computing Systems (CHI) 2022
Best Paper Honorable mention award (top 5%)
Top HCI Conference - Acceptance rate 24.7%

[D1] **Accurate Eating Detection on a Daily Wearable Necklace (Demo)**
Jaemin Shin, **Seungjoo Lee**, Sung-Ju Lee
International Conference on Mobile Systems, Applications and Services (MobiSys) 2019

[B1] **High School Arduino**
Comprehensive guide on conducting scientific experiments using Arduino
Chapter 4, 7, and 13 are written by me

RESEARCH EXPERIENCE

Microsft Research Sep 2024 - Present
Research Intern, Advised by Lili Qiu
Applied machine learning research on sensor data, targeting healthcare applications.

KAIST Network and Mobile Systems Lab Dec 2018 - Present
Graduate Student & Undergraduate Research Intern, Advised by Sung-Ju Lee

- **Federated Learning with Label Deficiency (Lead)** [C3]
  Mitigating the label deficiency problem of FL for its practical applications.
- **UWB-Based Personal Mobility Warning System for Pedestrians (Lead)**
  UWB-based sensing of approaching Personal Mobility (PM) and warning pedestrians to prevent collision.
- **Smartphone-Based Early Depression Diagnosis with a User's Daily Linguistic Expressions via Federated Learning** [C2]
  Implemented federated learning framework. Experimented preprocessing long input for LLMs. Reproduced existing paper to handle clients with only positive label. Pre-training LLMs with large corpus and distillation of pre-trained model into small models. Did the experiments about resource efficiency (computation, memory, battery) on various mobile devices.
- **Sensing Food Intakes with an Attachable on Your Eyeglass Frame** [C1, D1]
  Designing an novel wearable device that can be easily attached to eyeglass frames, capable of eating detection. Contributed the whole research process; problem definition, implementation, user study.

KAIST Computer Architecture & Systems Lab Mar 2018 - Jun 2018
Individual Research, Advised by Jaehyuk Huh
Worked on optimizing TLB shootdown by conducting an in-depth analysis of the Linux kernel with cscope, ctags, and ftrace. Investigated and identified unnecessary TLB shootdowns using ftrace and systemtap.

AWARDS & HONORS

KAIST Breakthroughs Spring 2023
Biannual KAIST webzine showcasing groundbreaking works

Winner of the Graduate of the Year Award (KAIST Board of Trustee Chairpeson's Prize) Feb 2023
2nd place out of 715 students, awarded to top 5 students (0.7%) who demonstrated outstanding performances in various activities as well as in grades. Awarded at the commencement ceremony

KAIST Summa Cum Laude Sep 2022
Awarded for achieving the highest academic performance among students

Engineering Innovator Award Sep 2022
Awarded to students showing outstanding performance in extracurricular activities, including academic publications, entrepreneurial activities, exhibitions, and inventions
Five students are picked from college of engineering each semester

Honorable Mention Award Mar 2022
Awarded to top 5% of all submissions in CHI 2022

U.S. Army Certificate of Appreciation Jul 2021
Awarded for exemplary service during military duty, serving as a role model for others

Dean's List Spring 2019, Fall 2019
Awarded to top 3% among 2,900+ students in College of Engineering

National Excellence Scholarship Fall 2018 - Fall 2019
National scholarship to students who showed excellence

Samsung Humantech Paper Award Spring 2015
Fourth prize on "An optimal path of navigation based on fractal dimension"

TEACHING EXPERIENCES

Computer Network (EE323) Spring 2024
Head of teaching assistants (Prof. Sung-Ju Lee)

Operating Systems and System Programming for Electrical Engineering (EE415) Fall 2023
Teaching assistant (Prof. Sung-Ju Lee)

Programming Structures for Electrical Engineering (EE209) Spring 2023
Teaching assistant (Prof. Sung-Ju Lee)

MENTORING EXPERIENCES

Seoyoung Park Jun 2024 - Oct 2024
Undergraduate research intern at NMSL
Doing a research project about *federated learning* together

Thanh Long Le Viet Oct 2023 - May 2024
Undergraduate research intern at NMSL
Doing a research project about *federated learning* together

Rachel Kim Dec 2023 - Feb 2024
Undergraduate research intern at NMSL
Doing a research project about *UWB-based personal mobility warning system for pedestrians* together

ACADEMIC SERVICES

Conference Reviewer

- International Conference on Mobile Systems, Applications, and Services (**Mobisys**), 2023-2024
- International Conference On Mobile Computing And Networking (**MobiCom**), 2023-2024
- Special Interest Group on Data Communication (**SIGCOMM**), 2023
- international Joint Conference on Pervasive and Ubiquitous Computing (**UbiComp**), 2022

Outreach

- **Educational Support for Students in Difficult Circumstances** Mar 2020 - Jun 2021
  Taught math and science to 4 middle school students for 2 hours every week (total ∼136 hours)
- **Mentor for the Gifted Education Program, SW/AI Camp** Summer 2022
  Facilitated a 2-night, 3-day program for elementary and middle school students, focusing on creating SW/AI-related kits, providing career mentoring, and conducting quizzes
- **CS101 tutor** Spring 2017, Fall 2017, Spring 2022
  Taught 5 freshman studying CS101 (introduction to programming)

EXTRA-CURRICULAR ACTIVITIES

KATUSA (Korean Augmentation to the U.S. Army) Dec 2019 - Jun 2021
Served national service at eighth army as a KATUSA
Provided translation between the U.S. and Korean army

International Students Organization (ISO) Sep 2016 - Dec 2019
Introduce Korean culture to international students

Embedded Software Club Mar 2014 - Dec 2015
Been a leader for a year
Published book about doing scientific experiments using Arduino [B1]