SEUNGJOO LEE

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RESEARCH INTERESTS

Machine Learning for Healthcare, Mobile Sensing, Large Language Model, Federated Learning

EDUCATION

Carnegie Mellon University Aug 2025 - Present
School of Computer Science, Ph.D. in Societal Computing
Advised by Mayank Goel & Justin Chan

KAIST (Korea Advanced Institute of Science and Technology) Sep 2022 - Jul 2025
M.S. and Ph.D. in Electrical Engineering (Transferred to Carnegie Mellon University)
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 GPA : 4.13/4.3 | Total GPA : 4.0/4.3
Graduated with Honors (2nd place out of 715 students)
Summa Cum Laude
∗ Including 1.5 years of mandatory military service

PUBLICATIONS

(C: Conference, D: Demo, W: Workshop, B: Book, P: Preprint)
** Equal contribution. † Equal senior role*

[P1] **Beyond Hearing: Learning Task-agnostic ExG Representations from Earphones via Physiology-informed Tokenization**
Hyungjun Yoon*, **Seungjoo Lee***, Yu Wu*, Xiaomeng Chen*, Taiting Lu, Freddy Yifei Liu, Taeckyung Lee, Hyeongheon Cha, Haochen Zhao, Gaoteng Zhao, Sung-Ju Lee, Dongyao Chen, Cecilia Mascolo, Lili Qiu
International Conference on Learning Representations (**ICLR**) 2026 (under review)

[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%

[W1] **CrashSniffer: UWB-Based Anchor-Free Pedestrian Collision Prediction for Personal Mobility Vehicles**
Taeckyung Lee, Juseung Lee, Ryuhaerang Choi, **Seungjoo Lee**, Hyeongheon Cha, Hyungjun Yoon, Song Min

Kim, Sangwook Bak, Sung-Ju Lee
MobiSys Workshops (**EnvSys**) 2025

[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 Asia [P1] Sep 2024 - Mar 2025
Research Intern, Advised by Lili Qiu
Developed a task-agnostic ExG representation learning framework trained on free-living ExG data, enabling robust performance across diverse downstream tasks such as gaze tracking, audio & visual interest classification, and smell & taste classification.

KAIST Network and Mobile Systems Lab Dec 2018 - Jul 2025
Graduate Student & Undergraduate Research Intern, Advised by Sung-Ju Lee

- **Federated Semi-Supervised Learning with Label Deficiency** [C3]
  Mitigating the label deficiency problem of federated semi-supervised learning for its practical applications.
- **Mental Health Monitoring with User-Generated Linguistic Expressions on Smartphones via Federated Learning** [C2]
  Privacy-preserving mental health monitoring using user-generated data from smartphones, such as text messages and phone calls. Contributed to methodology development and conducted experiments with LLMs, including pre-training, distillation, long-context handling, and evaluation.
- **Sensing Food Intakes with an Attachable on Your Eyeglass Frame** [C1, D1]
  Designing a novel wearable device that can be easily attached to eyeglass frames, capable of eating detection. Contributed the whole research process; problem definition, implementation, and user study.
- **UWB-Based Personal Mobility Warning System for Pedestrians** [W1]
  UWB-based sensing of approaching Personal Mobility (PM) and warning pedestrians to prevent collision.

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

NeurIPS 2025 Top Reviewer (Top 8.02%) Oct 2025
Recognized among the top 8.02% of 24,429 reviewers

CHI 2022 Honorable Mention Award Mar 2022
Awarded to top 5% of all submissions in CHI 2022 [C1].

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.

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

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

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 (2,900+) each semester.

KAIST Breakthroughs Spring 2023
Featured in biannual KAIST webzine showcasing groundbreaking works [C2].

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

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".

INVITED TALKS

MSRA Intern Tech Talk, MSRA Nov 2024
Overcoming Few Labels in Federated Semi-Supervised Learning [C3]

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 Learning Representations (**ICLR**), 2026
- Conference on Neural Information Processing Systems (**NeurIPS**), 2025
- International Conference on Mobile Systems, Applications, and Services (**MobiSys**), 2023-2025
- International Conference On Mobile Computing And Networking (**MobiCom**), 2023-2025
- 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 $\sim$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)

WORK EXPERIENCES

Internship at Samsung Electronics Jul 2021 - Aug 2021
MX (Mobile Experience) division, AI server development team

- Developing RESTful server using Spring boot. Gained hands-on experience in the entire server development process in a professional setting, including designing server APIs and implementing CI/CD pipelines.
  Selected as the **best project** in the division
- Presenting a new business item for Samsung, which was about developing kiosk for elderly people.
  Won **first place** in team Creathon project

Internship at SK Hynix Dec 2017 - Jan 2018
NAND development branch, Solution algorithm division

- Optimizing NAND-simulation program. Achieved 66% performance boost over existing code.
  Selected as the **best project** in the branch

PATENTS

[P3] "Adaptive State-Space Model-Based Deep Learning System for Real-Time Data Inference on Mobile Devices", Sung-Ju Lee, Seungjoo Lee, HyungJun Yoon, Korea patent (In progress)

[P2] "System and Method for Monitoring Mental Health Based on Smartphone User Language Expressions Through Federated Learning", Sung-Ju Lee, HyungJun Yoon, Seungjoo Lee, Jaemin Shin, Korea patent (Filing date: 2024.10.04, No. 10-2024-0135031)

[P1] "Artificial Intelligence Model Training Method and Apparatus for Voice Phishing Detection", Sung-Ju Lee, Seungjoo Lee, HyungJun Yoon, Korea patent (Filing date: 2023.10.04, No. 10-2023-0131748)

MILITARY SERVICE

KATUSA (Korean Augmentation to the U.S. Army) Dec 2019 - Jun 2021
Served national service at eighth army as a KATUSA, providing translation between the U.S. and Korean army.
Selected to participate as a Korean military interpreter in the EIB (Expert Infantryman Badge) contest, the U.S. Army's prestigious competition.

EXTRA-CURRICULAR ACTIVITIES

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

Flute Player in Cantabile (Orchestra) Mar 2014 - Jan 2016

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