

SEUNGJOO LEE

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EDUCATION

KAIST (Korea Advanced Institute of Science and Technology) Sep 2022 - Aug 2024(Expected)
M.S. in Electrical Engineering Total GPA : 4.15/4.3
Advised by Prof. 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)

Major Courses

Machine Learning – Advanced big data-AI integration, Deep learning for NLP, Bias and ethics in NLP, Reinforcement learning, Advances in Convolutional Neural Networks, Computer vision, Speech Recognition systems (ongoing), Sensor data science, Big data analytics using R

System – Computer networks, Operating system(Undergraduate, Graduate), Parallel computing, Computer organization(Undergraduate, Graduate), Mobile computing and applications

PUBLICATIONS

[P1] 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
[EMNLP 2023](#) | [paper](#) | [project website](#)

[P2] 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
[CHI 2022](#), **Honorable mention award** (top 5%) | [paper](#) | [project website](#) | [video](#) | [slides](#)

[P3] Accurate Eating Detection on a Daily Wearable Necklace (Demo)

Jaemin Shin, **Seungjoo Lee**, Sung-Ju Lee
[Mobisys 2019 Demo](#)

Held poster presentation and demonstration at the conference

[P4] High School Arduino

Book written by SADA (embedded software club), published by Jpub | [Book introduction](#)
Chapter 4, 7, and 13 are written by me

RESEARCH EXPERIENCES

Unlabeled Federated Learning via Programmatic Weak Supervision Nov 2022 - Present
Graduate student at [NMSL](#), advised by Prof. Sung-Ju Lee

Mitigating the label deficiency problem of FL for its practical applications

UWB-Based Personal Mobility Warning System for Pedestrians Feb 2023 - Present
Graduate student at [NMSL](#), advised by Prof. Sung-Ju Lee

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 [P1] Nov 2021 - Oct 2023

Undergraduate research intern at [NMSL](#), advised by Prof. Sung-Ju Lee

Implemented federated learning framework with pytorch. Experimented preprocessing long input for LLMs. Reproduced existing paper to handle clients with only positive label, and tested the performance with various dataset (FeMNIST, CIFAR10, Human activity recognition). Pre-training LLMs with large corpus (BERT, RoBERTa) and distillation of pre-trained model into small models (DistilBERT). Did the experiments about resource efficiency (computation, memory, battery) on various mobile devices. Contributed to writing.

Sensing Food Intakes with an Attachable on Your Eyeglass Frame [P2, P3] Dec 2018 - Nov 2021

Undergraduate research intern at [NMSL](#), advised by Prof. Sung-Ju Lee

Contributed the whole research process; problem definition, implementation, user study, and writing

Optimizing TLB Shutdown Mar 2018 - Jun 2018

Individual research at [CALAB](#), advised by Prof. Jaehyuk Huh

Analysis of linux kernel using cscope, ctags and ftrace

Analysis of unnecessary TLB shutdowns using ftrace and systemtap

WORK EXPERIENCES

Internship at Samsung Electronics Jul 2021 - Aug 2021

MX (mobile experience) division, AI server development team

Developing RESTful server using Spring boot

Selected as the **best project** in the division

Won **first place** in team Creathon project

Presenting a new business item that Samsung can do

Suggested a new business idea

Internship at SK Hynix Dec 2017 - Jan 2018

NAND development branch, Solution algorithm division

Optimizing NAND-simulation program

Selected as the **best project** in the branch

AWARDS & HONORS

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

PROJECTS

Will Overly Polite Sentences Harm Model Performance? Adversarial Pragmatic Perturbation for NLP

Team Project [website](#)

Mar 2023 - Jun 2023

Adversarial attack on LLM model with tone perturbation and its defense

Validating Labeling Functions in Domain Shift (Out of Domain detection)

Team Project [website](#)

Sep 2022 - Dec 2022

Domain shift detection using programmatic weak supervision

Context-Aware Automatic Video Screen Manipulation Using Trajectory Tracking

Team Project [website](#) | [video](#)

Sep 2021 - Dec 2021

Manipulating Youtube (rotate, zoom, relay from smartphone to laptop) using user head location & orientation

Implemented head tracking using Arduino & bluetooth connection between laptop, smartphone, and Arduino

DeltaCNN: Efficient Processing of CNN Inference for Continuous Mobile Vision

Team Project [website](#)

Sep 2019 - Dec 2019

Fast calculation of convolutional layers in continuous video streams using the fact that the video scene does not change significantly

GraspTraker: Tracking Smartphone Grab Posture with Inaudible Sound

Team Project [website](#)

Sep 2019 - Dec 2019

Detecting smartphone grasp posture using inaudible sound

SPADE-based Line Art Colorization

Team Project [website](#)

Sep 2019 - Dec 2019

SPADE-based model that colorizes a given line art image using a hint image

Pintos

Team Project

Mar 2019 - Jun 2019

Implemented 4 sub-projects of [pintos](#) (threads, user programs, virtual memory, file system) with perfect score

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)

Volunteered for 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)

MENTORING EXPERIENCES

Thanh Long Le Viet

Oct 2023 - Present

Undergraduate research intern at [NMSL](#)

Doing a research project about *unlabeled federated learning* together

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

SKILLS

Computer Skills

Languages C/C++, Python, Kotlin, Java

Platforms/Frameworks Android, Pytorch, Tensorflow, Spring boot, Arduino

Video Softwares Vegas, AfterEffect, Premier

Languages

Fluent in English and Korean

TOEIC 955 (Tested in 2022)