

# SEUNGJOO LEE

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## EDUCATION

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**KAIST (Korea Advanced Institute of Science and Technology)**

Sep 2023 - Sep 2024(Expected)

M.S. in Electrical Engineering

Total GPA : 4.12/4.3

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*

### Major Courses

Mobile computing and applications, Sensor data science, Advanced big data-AI integration, Big data analytics using R, Deep learning for NLP, Bias and ethics in NLP, Reinforcement learning, Introduction to AI, Computer vision, Operating system(Undergraduate, Graduate), Parallel computing, Computer networks, Computer organization(Undergraduate, Graduate)

## PUBLICATIONS

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**[P1] FedTherapist: Mental health monitoring with user-generated linguistic expressions on smart-phones via federated learning**

Jaemin Shin, Hyungjun Yoon, **Seungjoo Lee**, Sungjoon Park, Yunxin Liu, Jinho D. Choi, Sung-Ju Lee

[EMNLP 2023](#) | [paper](#)

**[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](#)

**[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

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**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. 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 - June 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

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**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

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**KAIST 2023 Whole Person Development 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

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

*Team Project* [report](#)

Mar 2023 - Jun 2023

Adversarial attack on LLM model with tone perturbation and its defense

### **Validating Labeling Functions in Domain Shift**

*Team Project* [report](#)

Sep 2022 - Dec 2022

Domain shift detection using programmatic weak supervision

### **Context-Aware Automatic Video Screen Manipulation Using Trajectory Tracking**

*Team Project* [report](#) | [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* [report](#)

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* [report](#)

Sep 2019 - Dec 2019

Detecting smartphone grasp posture using inaudible sound

### **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

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### **Programming structures for electrical engineering (EE209)**

Spring 2023

Teaching assistant (Prof. Sung-Ju Lee)

### **Operating systems and system programming for electrical engineering (EE415)**

Fall 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

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### **Thanh Long Le Viet**

Oct 2023 - Present

Undergraduate research intern

## ACADEMIC SERVICES

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**Reviewer**, ACM IMWUT/UbiComp

Nov 2022

## EXTRA-CURRICULAR ACTIVITIES

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### **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

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### **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)