Taeyoung Yeon

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INTEREST Human-Computer Interaction, Mobile Computing, On-device AI, Machine Learning

EDUCATION **Seoul National University**, Seoul, South Korea February 2024
B.S in Computer Science and Engineering
Overall GPA: 3.53/4.00

PUBLICATIONS **EdgeHAR: Real-time On-device Human Activity Recognition System for Smartwatches**
In Preparation for IMWUT, February 1, 2025

- Led the project as the sole first author.
- Developed an on-device multimodal sensing system for human activity recognition on the Apple Watch Series 7, utilizing audio and IMU data.
- Optimized audio processing speed by integrating a GPU-based log-mel spectrogram preprocessor with a MobileNetV3 backbone, enabling real-time application on smartwatches.
- Employed effective training techniques to achieve a $25\times$ performance acceleration, reducing model size by $10\times$ while maintaining over 90% accuracy.
- Conducted a battery consumption study on the Android platform and revised the paper accordingly.
- Utilized cross-platform libraries including PyTorch Android, CoreML, TensorFlow Lite, and TensorFlow to ensure scalability across various edge devices.

WORK EXPERIENCE **Full Stack Game Developer** September 2019 – February 2023
Awesomepiece, Seoul, South Korea

- Managed live game services serving as Alternative Military Service
- Performed tasks such as in-game content development and server management
- Recognized for achievements and promoted to the position of Development Team Leader

CUDA Engineer Intern July 2019 – August 2019
MindsLab, Pangyo, South Korea

- Achieved speed increase in Tacotron 2 TTS module using CUDA MPS
- Developed Python-based profiler to assess model performance

RESEARCH EXPERIENCE **Post-Baccalaureate Research Fellow (On-Site)** September 2024 – Present
advised by Prof. Karan Ahuja
Northwestern University, Evanston, IL

- Working on human activity sensing, Machine Learning, On-Device AI
- Established new laboratory environments and managed lab equipment, including NAS and lab servers
- Developing infrastructure for large-scale dataset collection and inertial sensor based navigation

Research Assistant (Remote Collaboration) September 2023 – August 2024
advised by Prof. Karan Ahuja

- Focused on developing on-device human activity recognition in smartwatch

Research Assistant August 2023 – January 2024
Human-Centered Computer Systems Lab, advised by Prof. Youngki Lee
Seoul National University, Seoul, South Korea

- Worked on project displaying status efficiently during VR meetings
- Developed prototype VR meeting application and designed user study

Research Intern March 2023 – February 2024
Human-Computer Interaction Lab, advised by Prof. Jinwook Seo
Seoul National University, Seoul, South Korea

- Served as Student Volunteer at PacificVis 2023 Conference
- Participated in project analyzing effective visualization techniques in pre-recorded online lectures

Research Assistant July 2023 – August 2023
Real-Time Ubiquitous System Lab, advised by Prof. Chang-Gun Lee
Seoul National University, Seoul, South Korea

- Developed AI model for mental health diagnosis based on learning behaviors
- Debugged React Native Android applications using Android Studio
- Analyzed experimental data and trained AI models using TensorFlow

PROJECTS **King God Castle**, *at Awesomepiece* September 2021 – February 2023
Skills : Java (Spring Boot), C#(Unity), TypeScript, MySQL, Google Cloud Platform

- Managed global game service expanding to over 20 countries, 8 languages
- Developed dynamic UI tools in Unity native for in-game multi-language features
- Led Development Team, oversaw schedules, mentored five junior developers

Zombie High School, *at Awesomepiece* September 2019 – September 2021
Skills : Java (Netty), C#(Unity), Python (Django), MySQL

- Improved user experience with features like ranked-game reconnect
- Analyzed user gameplay using logging, database queries
- Managed multi-threaded game servers handling up to 100,000 concurrent online users

COMPUTER SKILLS **Virtual Reality** : Unity (Meta SDK), C#
Ubiquitous Computing : Kotlin, Swift, Tensorflow, Pytorch, CoreML, CUDA
Programming : Java (Spring boot, Netty), Python (Django), Javascript (React)

LANGUAGE PROFICIENCY **Korean**
Native proficiency

English
Fluent - iBT TOEFL 106 (Reading : 29 Listening : 26 Speaking : 23 Writing : 28) -
Tested in 2024.11

HONORS-AWARDS **Seoul National University Academic Excellence Scholarship** 2017 - 2023

- Merit-based academic scholarship (Awarded for high academic performance)