Heesoo Kim

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Education

Purdue University — West Lafayette, IN
MS in Computer Engineering — *Aug 2024 – Present*

Purdue University — West Lafayette, IN
BS in Computer Engineering, Minor in Math — *GPA 3.58/4.0*

Experience

Samsung Electronics — Suwon, South Korea
Machine Learning Engineering Intern — *June 2024 – Aug 2024*

- Analyzed **150k** audio samples, boosting Bixby's speaker verification accuracy by **3.5%**
- Fine-tuned ECAPA and Depthwise CNN models in PyTorch for improved speaker verification
- Applied speaker data augmentation, reducing Equal Error Rate (EER) from 11% to **8.6%**
- Implemented normalization techniques, further reducing EER to **7.5%**

Google ML x Purdue — West Lafayette, IN
Undergraduate Researcher — *Aug 2023 – May 2024*

- Created a contrastive learning model to identify misclassified pre-trained architectures, achieving **91%** accuracy
- Trained a classifier on 107 unique architectures, attaining **96.55%** accuracy
- Fine-tuned RoBERTa model to generate embeddings for a custom dataset

Samsung Electronics — Suwon, South Korea
Software Engineering Intern — *June 2023 - Aug 2023*

- Designed a custom camera app leveraging Samsung Android plugins and Camera2 API
- Collaborated with **a team of 5** engineers to integrate the app into Samsung's Wiki
- Integrated real-time image capture with backend storage, ensuring smooth data handling

C-Design Lab — West Lafayette, IN
Undergraduate Researcher — *Jan 2023 – May 2023*

- Fine-tuned a Detectron2 model on a custom COCO dataset, accomplishing over **85%** accuracy
- Constructed an image annotation tool, enhancing performance by **1.5 times faster** than the widely used tool, Labelme
- Automated camera calibration, reducing process time from 5 to **2** minutes
- Utilized WSL and SSH for efficient development and code updates

Leadership

Graduate Teaching Assistant | *Python, MATLAB, Excel, Git* — Aug 2024 – Present

- Led **a team of 6** Undergraduate Teaching Assistants, coordinating grading schedules and weekly meetings
- Conducted weekly help sessions, supporting **150+** first-year engineering students
- Managed course website updates with Git for timely and accurate information

Projects

Network Packet Transmission Simulator | GitHub | *Python, Socket Programming*

- Built a network emulator to simulate real-world conditions like latency, packet loss, and sequence alteration
- Implemented stop-and-wait and sliding window protocols
- Optimized transmission algorithms, revamping goodput by **25%** and minimize overhead by **8%**

Web-Based Package Management System | GitHub | *TypeScript, REST API, Node.js, AWS*

- Developed a REST API for uploading, updating, and rating npm packages on AWS with CI/CD integration
- Utilized Postman to manage data via API calls on an EC2 server
- Conducted security analysis on system components using RESTler

Technical Skills

Languages: Python, C/C++, TypeScript, MATLAB, SQL, Java
Relevant Technologies: PyTorch, TensorFlow, Git, Android Studio