Soohwan **Kim**

AI Research Engineer · Software Developer

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"Try your best rather than be the best"

Summary

Current AI Research Engineer at Kakao Brain. I majored in electonic & communication engineering and minor in data science in university. My research interests include in technologies for human-machine interaction, such as automatic speech recognition, speech synthesis and natural language processing etc. I enjoy software development and sometimes I like to write my knowledge or thought. I wanna be helpful to others through open source. You can check my github (http://github.com/sooftware) to see what I've done and I'm doing.

Education

Kwangwoon University — *Seoul, South Korea*

Major B.E. in Electronic & Communication Engineering / Minor B.E. in Data Science — *Mar. 2014 - Feb. 2021 (Expected)*

- **Major GPA** : 3.90 / 4.5 / **Total GPA** : 3.70 / 4.5
- **Courses**: Capstone Design I-II, AI & Speech Signal Processing, Software Design, Computer Architecture, Operating System, C programming, Basic Electronic Circuit Experiment I-II, Circuit Theory I-II, Engineering Math I-II, Digital Logic, Phisics Electronic Technology, Object-Oriented Programming, Digital Signal Processing, System Programming, Electronic Circuit Experiment I-II, Data Communication, Data Structure & Algorithm, Computer Network, Network Programming, Probability and Irregular Signaling Theory, Development Open-Source Software, Mobile Programming, Big Data Language, Object-Oriented Programming Practice, Data Mining, Big Data Processing & Application, Database, Statistical application, Planning Theory of IoT System

Career

Kakao Brain — *Pangyo, Gyunggi*

AI Research Engineer — *Nov. 2020 - Present*

- Research & Develop Speech and NLP fields
- Participation in NLP library development (Named Pororo)

Kakao Brain — *Pangyo, Gyunggi*

Research Internship — *Aug. 2020 - Nov. 2020*

- Research & Develop English, Korean and Chinese Speech Recognition models
- Multilingual Text-To-Speech model development (10 languages)

Spoken Language Lab (Sogang Univ.) — *Mapo, Seoul*

Undergraduate Researcher — *Apr. 2020 - Aug. 2020*

- Research End-to-End Automatic Speech Recognition Models
- Research Real-time Speech Recognition Based on Kaldi Toolkit

Technical Blog — *Naver Blog*

Writer — *Aug. 2018 - Present*

- Technical posting of deep learning, programming, signal processing, paper review etc.
- Having more than 100 subscribers and an average of 200 visitors a day
- *Blog Link*

Research Interests

Automatic Speech Recognition, Speech Synthesis, Natural Language Processing

Software Development, Software Architecture

Voice Activity Detection, Speech Enhancement, Cross-lingual

Publication

2020 **End-to-End ASR Models in English, Korean and Chinese,** Bachelor's Graduation Thesis

2020 **KoSpeech: Open-Source Toolkit for E2E Korean Speech Recognition,** arXiv pre-print

Project Experience

Multilingual Speech Synthesis

Kakao Brain

Director

Oct. 2020 - Nov. 2020

- Development of a speech synthesis model that supports 10 languages
- Supports for Voice-Cloning and Code-Switching

English, Korean and Chinese ASR Models Development

Kakao Brain

Director

Aug. 2020 - Oct. 2020

- Development of English, Korean and Chinese Wav2vec 2.0 Models
- Experiment for improving the speed of inference
- Comparative experiment on accuracy / inference speed by output-unit such as Character, Grapheme and Subword

KoSpeech

Kwangwoon University

Team Leader

Jan. 2020 - Aug. 2020

- Open-Source Toolkit for End-to-End Korean Speech Recognition
- Recorded the performance of the model at `10.31` character error rate
- Got more than `100 stars` on the GitHub site.
- *GitHub* / *Technical Report*

Extracurricular Activity

NLP Paper Reading

Kakao Brain

Group Member

Sep. 2020 - Present

- Kakao Brain Natural Language Processing Team's weekly paper reading study
- Discuss the content of the thesis and record it on *this link*

Deep Learning Principle Study Group

Kwangwoon University

Group Member

Jan. 2020 - June. 2020

- Joined a study group studying basics of deep learning with mathematics.
- Implemented nodes from scratch using numpy and pandas, read papers
- Study audio signal processing.

Speech Recognition Study Group

Kwangwoon University

Group Member

Jan. 2020 - Mar. 2020

- Study speech signal processing (Spectrogram, Mel-Scale, MFCC etc ..)
- Review of the paper on speech recognition record it on *this link*

Skills

Programming	`Python, Java, C/C++, Shell Script, SQL, Android, Arduino, Assembly, HTML`
Deep Learning	`PyTorch, Fairseq, PyTorch Lightning`
Data Analysis	`Numpy, Pandas, Matplotlib, Seaborn, Scikit-learn, NLTK`

Honors & Awards

Awards

2020.11 **1st Place**, Kwangwoon Engineering Festival (President's Award)
2020.11 **People's Choice Award**, Kwangwoon Engineering Festival
2019.10 **12th Place**, Naver A.I Hackathon - Speech
2019.09 **Finalist**, Kwangwoon University software start-up idea contest - Fall
2019.04 **People's Choice Award**, Kwangwoon University software start-up idea contest - Spring
2018.08 **Excellence Award**, Samsung Multi-Campus in Java-based Algorithm for SW Development

Honors

2020.01 **School Representative**, 5G-based ICT Convergence Service Idea Contest
2020.03 **Excellent Scholarship**, Samsong Scholarship
2019.03 **Excellent Scholarship**, Samsong Scholarship
2019.03 **Academic Excellent Scholarship**, Kwangwoon University
2018.09 **Academic Excellent Scholarship**, Kwangwoon University
2018.03 **Academic Excellent Scholarship**, Kwangwoon University