# Soohwan **Kim**


AI Research Engineer · Software Developer

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*"Who likes to play with codes"*

## About Me

Current AI Research Engineer at Kakao Brain. I majored in Electronic & Communication Engineering and minored in Data Science at university. My research interests include technologies for human-machine interaction, such as automatic speech recognition, speech synthesis, and natural language processing. I enjoy software development and sometimes like to write my knowledge or thoughts. I want to be helpful to others through open source. You can check my github page (http://github.com/sooftware) to see what I am currently up to.

## Education

**Kwangwoon University** *Seoul, South Korea*

Major in Electronic & Communication Engineering / Minor 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, Machine Learning, Computer Architecture, Operating System, Data Structure & Algorithm, Data Mining, Network Programming, IoT System Design, Big Data Language, Big Data Processing & Application, Database, Digital Signal Processing, Statistical application, Object-Oriented Programming, Object-Oriented Programming Practice, Open-Source Software, System Programming, C programming, Mobile Programming, Data Communication, Computer Network, Basic Electronic Circuit Experiment I-II, Electronic Circuit Experiment I-II, Electronic Circuit Theory I-II, Digital Logic, Physics Electronic Technology, Engineering Math I-II, Probability and Irregular Signaling Theory, Probability and Statistics

## Professional Experience

**Kakao Brain** *Pangyo, Gyunggi*

AI Research Engineer *Nov. 2020 - Present*

- Research & Develop Speech and Natural Language Processing fields
- Develop Natural Language Processing toolkit used to conduct various NLP tasks (e.g. ASR, NMT, TTS, ..., etc.)

**Kakao Brain** *Pangyo, Gyunggi*

Internship *Aug. 2020 - Nov. 2020*

- Research & Develop English, Korean and Chinese Automatic Speech Recognition models
- Development of Multilingual Speech Synthesis Model with Support for 10 Languages

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

Undergraduate Researcher *Apr. 2020 - Aug. 2020*

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

## Research Interests

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|---|---|
| **Speech** | Speech Recognition, Speech Synthesis, Voice Activity Detection, Speech Enhancement |
| **NLP** | Machine Translation, Language Model, Cross-lingual |
| **Software** | Software Architecture, Object-Oriented Programming, Data Structure, Algorithm |

## Skills

| | |
|---|---|
| **Programming** | Python, Java, C/C++, Shell Script, SQL, Android, Arduino, Assembly, HTML |
| **Deep Learning** | PyTorch, Fairseq, PyTorch Lightning, Wav2letter, Kaldi |
| **Data Analysis** | Numpy, Pandas, Matplotlib, Seaborn, Scikit-learn, BeautifulSoup, Selenium, NLTK |

## Publication

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

2020 **KoSpeech: Open-Source Toolkit for End-to-End Korean Speech Recognition**, ELSEVIER, SIMPAC

## Project Experience

### Multilingual Speech Synthesis
*Kakao Brain*

Representative — *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*

Representative — *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: Open-Source Toolkit for End-to-End Korean Speech Recognition
*Kwangwoon University*

Author — *Jan. 2020 - Aug. 2020*

- Currently, over **100** people are stargazer this project [link]
- Write Technical Reports in arXiv [link]

## Extracurricular Activity

### NLP Paper Reading
*Kakao Brain*

Group Member — *Sep. 2020 - Present*

- Kakao Brain Natural Language Processing Team's weekly paper reading study
- Reading a paper and summarizing its contents [link]

### 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 [link]

### Speech Recognition Study Group
*Kwangwoon University*

Group Member — *Jan. 2020 - Mar. 2020*

- Study speech signal processing (Spectrogram, Mel-Scale, MFCC etc ..)
- Reading a paper of speech recognition and recording its contents [link]

## Teaching Experience

### Samsung AI Expert Course - Speech Recognition
*Spoken Language Lab*

Teaching assistant — *Jul. 2020 - Aug. 2020*

- Conducted Teaching Assistant role in the Speech Recognition session

### Object-Oriented Programming Practice
*Kwangwoon University*

Teaching assistant — *Mar. 2020 - Jun. 2020*

- Covered basic JAVA programming, Ran laboratories and had office hours every week.
- Answered students' questions in person and marked assignments

## Awards & Honors

### Awards

2020.11 **1st Place, People's Choice Award**, Kwangwoon Engineering Festival (President's Award)
2019.10 **Finalist (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 **Best Award**, Samsung Multi-Campus in Java-based Algorithm for SW Development

### Honors

2020.03 **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