# Soohwan **Kim**

AI RESEARCH ENGINEER · SOFTWARE ENGINEER

*11 F, 20, Pangyoyeok-ro 241 beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13494, Korea*

(+82) 10-4564-4668 | sh951011@gmail.com | sooftware.github.io | sooftware | Soo-hwan

*"Who likes to play with codes"*

## **Abo**ut 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.

## **Edu**cation

**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** : 3.69 / 4.5
- **Major 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

## **Pro**fessional 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

## **Res**earch Interests

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

## **Ski**lls

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

## **Pub**lication

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

### Pororo: A Deep Learning based Multilingual NLP Library
*Kakao Brain*

Team Member
*Sep. 2020 - Present*

- Libraries that focus on performing natural language processing tasks
- Responsible for developing speech projects within Pororo

### KoSpeech: Open-Source Toolkit for End-to-End Korean Speech Recognition

Author
*Jan. 2020 - Present*

- Modular and extensible end-to-end Korean automatic speech recognition (ASR) toolkit
- Currently, over **100** people are stargazer this project  [link]

### Deep Learning Model Implementation

Author
*Jan. 2020 - Present*

- Speech Recognition : DeepSpeech-2, Listen-Attend-Spell, Speech-Transformer, Joint CTC-Attention, Jasper
- Speech Synthesis : Tacotron2, Multilingual-Tacotron2
- Natural Language Processing : RNN-LM, Seq2seq, Transformer

# 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

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|---|---|
| 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 |