Soohwan **Kim**

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"Let's be better than yesterday"

Education

Kwangwoon University — *Seoul, South Korea*

Senior Student In Electronic And Communication Engineering Dept, Minor In Data Science — *Mar. 2014 - Feb. 2021 (Expected)*

- Major GPA of 3.90 / 4.5, Total GPA of 3.70 / 4.5

Work Experience

KakaoBrain — *Pangyo, Gyunggi*

Intern — *Aug. 2020 - Present*

- Signals team : Special Interest Group of NAtural Language and Sound
- Research and Develop Speech Recognition, Speech Synthesis

Spoken Language Lab (of Sogang University) — *Mapo, Seoul*

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

- Open Source Project for Character-based Korean End-to-End Automatic Speech Recognition.
- Research on Speech Recognition Units, such as Character, Grapheme, Subword
- DNN-based Acoustic Model Research
- Kaldi : Open Source Speech Recognition Toolkit

Project Experience

Korean-English Speech Translation System

Team Leader — *Jul. 2020 - Present*

- The goal is to establish a speech translation system combining speech recognition and machine translation technology.
- Implement Transformer model proposed in "Attention Is All You Need" *Related Link*

KoSpeech

Team Leader — *Jan. 2020 - Aug. 2020*

- Open Source Project Korean End-to-End Automatic Speech Recognition
- Provide a learning environment through a variety of options
- Using a Korean Speech corpus opened in AI Hub.
- Recorded the performance of the model at **10.31** CER (Character Error Rate) with sampled test data.
- Got more than **100 stars** on the GitHub site. *Related Link*

2019 Naver A.I Hackathon - Speech

Team Leader — *Sep. 2019 - Oct. 2019*

- **Ranked 12/100** in Korean speech recognition competition hosted by Naver. (2nd ranked in undergraduate)
- Using 100 hours of limited data provided by Naver
- Recorded the performance of the model at **24.67** CER (Character Error Rate).
- Improved the performance of the model through changing feature extraction, introduction of convolution layer to encoder. *Related Link*

Side Projects

Author — *Mar. 2018 - Present*

- Speech Transformer - 2020 Summer *Related Link*
- Smart Home IoT Platform - 2020 Spring *Related Link*
- Attention Implementation - 2019 Winter *Related Link*
- Pytorch-Seq2seq - 2019 Winter *Related Link*
- Sequence-to-Sequence Neural Machine Translation - 2019 Winter *Related Link*
- Review based Wine Recommendation - 2019 Fall. *Related Link*
- Correlation Analysis Program between Naver, Daum, Google Search Ranking - 2019 Fall *Related Link*
- Cloud service - 2019 Summer *Related Link*
- TCP Multi Chatting Program - 2019 Spring. *Related Link*
- Fastfood order program - 2018 Summer *Related Link*
- Gallaga game - 2018 Spring *Related Link*

Research Interests

Speech

Speech Recognition, Speech Synthesis, Signal Processing

- End-to-End Automatic speech recognition for various language
- Research on the output unit such as character, grapheme, subword etc..
- Speed improvement of speech recognition
- Improved speech synthesis quality

Natural Language Processing

Neural Machine Translation, Language Model

- Machine translation from Korean to another language
- Language correction through language model
- Fusion of speech recognition and language models

Software Development

Deep Learning, Machine Learning

- Design a simple, readable and extensible software
- Design a low time complexity
- Library development

Extracurricular Activity

Tech Blog

Author *Aug. 2018 - Present*

- Blogging about what I've learned. (Deep Learning, Audio Signal Processing, Operating System, etc..) *Related Link*
- More than 200 posts and an average of 100 people per day have visited.

Deep Learning Principle Study Group

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

Group Member *Jan. 2020 - Mar. 2020*

- Study speech signal processing (Spectrogram, Mel-Scale, MFCC etc ..)
- Review of the paper on speech recognition (Listen, Attend and Spell, SpecAugment etc ..) *Related Link*

Skills

Signal Processing	Torchaudio, Librosa, Audacity, Goldwave
Programming	Android, Arduino, Assembly, C, C++, Java, Python, Shell Script, SQL, HTML, XML
Deep Learning	Pytorch, Fairseq, OpenNMT
Data Analysis	Numpy, Pandas, Matplotlib, Seaborn, Scikit-learn
Development Tool	VI Editor, Pycharm, Jupyter Notebook, Vscode, Visual Studio, Eclipse, Oracle, Mysql, Git, mobaXterm

Honors & Awards

Awards

2020 **School Representative**, 5G-based ICT Convergence Service Idea Contest
2019 **12 Ranked**, 2019 Naver A.I Hackathon - Speech
2019 **Finalist**, Idea Contest - Kwangwoon University software start-up idea contest - Fall
2019 **Popularity Award**, Kwangwoon University software start-up idea contest - Spring
2018 **Award for Best Practices**, Samsung Multi-Campus in Java-based Algorithm for SW Development Course

Honors

2020 **Excellent Scholarship**, Samsong Scholarship
2019 **Academic Excellent Scholarship**, Kwangwoon University
2019 **Excellent Scholarship**, Samsong Scholarship
2018 **Academic Excellent Scholarship**, Kwangwoon University
2018 **Academic Excellent Scholarship**, Kwangwoon University