Soohwan **Kim**

AI RESEARCH ENGINEER · SOFTWARE DEVELOPER

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"Toward Human-like A.I."

About Me

I would like to introduce myself as an artificial intelligence research engineer rather than a research scientist. My dream is to create conversational digital humans who people emotionally engage with - so I am very interested in deep learning techniques such as speech recognition, speech synthesis, and open-domain dialogue. Recently I began a startup with 5 co-founding members - all of them were my teammates at Kakao Brain. We named our startup **TUNiB**. We are looking for talented colleagues to work with. If you are interested, please don't hesitate to contact me.

Professional Experience

TUNiB *Gangnam, Seoul*
CO-FOUNDER, AI RESEARCH ENGINEER *Mar. 2021 - Present*
- The start-up that founded in March 2021 with my former Kakao Brain team members.
- Research and development of A.I. that enables human-like conversation.
- Topics on Natural Language Processing
  - • 2021 AI Online Contest - conversation sentiment classification task (1st Ranked)
  - • GPT style model tuning experiment (fine-tuning, p-tuning, prefix-tuning)
  - • Retrieval base Character chatbot
- Homepage: http://www.tunib.ai

Kakao Brain *Pangyo, Gyunggi*
AI RESEARCH ENGINEER *Nov. 2020 - Mar. 2021*
- Speech and natural language processing team.
- Research and development the latest NLP & Speech technology.
- Topics on Natural Language Processing
  - • PORORO: Platform Of neuRal mOdels for natuRal language prOcessing
  - • NLP paper reading
  - • Retrieval base image captioning
- Topics on Speech Processing
  - • Multilingual Text-To-Speech
  - • Cross-lingual Text-To-Speech
- Homepage: https://www.kakaobrain.com

Internships

Kakao Brain *Pangyo, Gyunggi*
INTERNSHIP *Aug. 2020 - Oct. 2020*
- Speech and natural language processing team.
- Internship project
  - • Wav2vec 2.0 base Chinese speech recognition
  - • Wav2vec 2.0 base Korean speech recognition
  - • English end-to-end speech recognition

Auditory Intelligence Lab *Mapo, Seoul*
INTERNSHIP *Apr. 2020 - Aug. 2020*
- Department of Computer Science & Engineering Sogang University
- Activities
  - • KoSpeech: Open-Source Toolkit for End-to-End Korean Automatic Speech Recognition.
  - • Samsung AI Expert Course - Speech Recognition (Teaching Assistant)
- Homepage: https://speech.sogang.ac.kr

Samsung Multi-Campus *Gangnam, Seoul*
CREDIT-LINKED SHORT-TERM INTERNSHIP *Jul. 2018 - Aug. 2018*
- Credit-linked short-term internship.
- Taking software development training using Java and Database
- Got the Outstanding Award among the trainees.
- Homepage: https://www.multicampus.com

Education

Kwangwoon University   *Seoul, South Korea*

BACHELOR OF ENGINEERING   *Mar. 2014 - Feb. 2021*

- **Major**: Electronics & Communication Engineering, **Minor**: Data Science
- **Major GPA** : 3.90 / 4.5, **Total GPA** : 3.67 / 4.5
- **Scholarship** :
  - Samsong Scholarship (2020)
  - Samsong Scholarship (2019)
  - Bima Scholarship - Competitive Scholarship (2019-Spring)
  - Bima Scholarship - Competitive Scholarship (2018-Fall)
  - Bima Scholarship - Competitive Scholarship (2018-Spring)
- **Honors** :
  - President's Award - 1st place (Kwangwoon Engineering Festival)
  - People's Choice Award (Kwangwoon Engineering Festival)
  - Outstanding Award (Multi-Campus)
  - People's Choice Award (Startup Idea Contest)
  - School Representative (SKT 5G-based Convergence Idea Contest)

Project Experience

Conversation Sentiment Classification   *TUNiB*

LEAD DEVELOPMENT   *Jun. 2021 - Jul. 2021*

- Artificial intelligence competition organized by the Ministry of Science and ICT (2021 AI Online Contest)
- 1st Ranked in Public / Private / Final Leaderboard
- Task of classifying human emotions from human-AI conversation data.

OpenSpeech   *Personal*

TEAM LEADER   *Mar. 2021 - Present*

- Framework that enables easy creation of speech recognition models of various models and various languages.
- Dozens of models including Transformers, ContextNets, Transformers, and Listen Attend Spell.
- Page: https://github.com/sooftware/openspeech

Big Model Tuning Experiment   *TUNiB*

THE PERSON IN CHARGE   *May. 2021 - Jun. 2021*

- Fine-tuning, prefix-tuning, p-tuning experiments on GPT style models.
- Apply to chat format data.

TV Character chatbot   *TUNiB*

THE PERSON IN CHARGE   *Apr. 2021 - May. 2021*

- Developing a chatbot that talks like a TV character like Sheldon in the Big Bang Theory.
- Used open data and retrieval base method.

PORORO: Platform Of neuRal mOdels for natuRal language prOcessing   *Kakao Brain*

TEAM MEMBER   *Sep. 2020 - Feb. 2021*

- Library that can solve more than 30 natural language processing tasks in just 3-4 lines with pre-trained models.
- Development Automatic Speech Recognition, Multilingual Text-To-Speech task.
- Page: https://github.com/kakaobrain/pororo

KoSpeech: Open-Source Toolkit for End-to-End Korean Speech Recognition   *Kwangwoon Univ.*

TEAM LEADER   *Jan. 2020 - Feb. 2021*

- Framework for making speech recognizers specialized in Korean easily.
- Support models: Conformer, Transformer, Jasper, Listen Attend Spell, DeepSpeech2 etc.
- Paper: https://www.sciencedirect.com/science/article/pii/S2665963821000026
- Page: https://github.com/sooftware/KoSpeech

Multilingual Text-To-Speech   *Kakao Brain*

THE PERSON IN CHARGE   *Oct. 2020 - Feb. 2021*

- Development of Kakao Brain's TTS technology. [link]
- Support 11 languages, cross-lingual voice style transfer, code-switching.
- Page: https://pororo-tts.github.io

Speech Recognition using Wav2vec 2.0   *Kakao Brain*

THE PERSON IN CHARGE   *Aug. 2020 - Oct. 2020*

- Development of Kakao Brain's ASR technology.
- Development of English, Korean, and Chinese speech recognizers.
- Page: https://kakaobrain.github.io/pororo/miscs/asr.html

Deep Learning Model Implementation *Personal*

PERSONAL *Jan. 2020 - Present*

- "Conformer: Convolution-augmented Transformer for Speech Recognition" (INTERSPEECH 2020)
- "QuartzNet: Deep Automatic Speech Recognition with 1D Time-Channel Separable Convolutions" (ICASSP 2020)
- "Jasper: An End-to-End Convolutional Neural Acoustic Model" (INTERSPEECH 2019)
- "Speech-Transformer: A No-Recurrence Sequence-to-Sequence Model for Speech Recognition" (ICASSP 2018)
- "Natural TTS Synthesis by Conditioning WaveNet on Mel Spectrogram Predictions" (ICASSP 2018)
- "State-of-the-art Speech Recognition With Sequence-to-Sequence Models" (ICASSP 2018)
- "Attention Is All You Need" (NIPS 2017)
- "Advances in Joint CTC-Attention based End-to-End Speech Recognition with a Deep CNN Encoder and RNN-LM" (INTERSPEECH 2017)
- "Listen, Attend and Spell" (ICASSP 2016)
- "Deep Speech 2: End-to-End Speech Recognition in English and Mandarin" (ICML 2016)
- "Attention-Based Models for Speech Recognition" (NIPS 2015)
- "Neural machine translation by jointly learning to align and translate" (ICLR 2015)
- "Sequence Transduction with Recurrent Neural Networks" (ICML 2012)

PyTorch LR Scheduler *Personal*

PERSONAL *May. 2021 - May. 2021*

- Collection of learning rate schedulers that I often use.

Naver AI Hackathon - Speech *Kwangwoon University*

TEAM LEADER *Sep. 2019 - Oct. 2019*

- Automatic speech recognition competition held by Naver.
- 12th place (When I was a junior in University)

Extracurricular Activity ─────────────────────────

Speech Paper Reading *Study*

GROUP MEMBER *Dec. 2020 - Present*

- Weekly speech processing paper reading study [link]

NLP Paper Reading *Study*

GROUP MEMBER *Sep. 2020 - Feb. 2021*

- Kakao Brain Natural Language Processing Team's weekly paper reading study [link]

Technical Blog *Blog*

WRITER *Aug. 2018 - Present*

- Technical posting of deep learning, programming, signal processing, paper review etc. [link] [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.

Military Service ─────────────────────────

ROKMC **Served and discharged from Republic of Korea Marine Corps as Signaller, Sergeant**, 2015.09 - 2017.06

Competitions ─────────────────────────

2021	**1st Ranked**, AI Online Contest - Conversation Sentiment Classification Track		*MSIT*
2020	**3rd Ranked**, AI Grand Challenge - Speech Recognition Track (Advisor)		*MSIT*
2019	**Finalist (12th Ranked)**, Naver AI Hackathon - Speech (Team Leader)		*Naver*

Publication ─────────────────────────

2021	**Open-Source Toolkit for End-to-End Korean Speech Recognition**, ELSEVIER, SIMPAC, Volume 7, 100054	
2020	**KoSpeech: Open-Source Toolkit for End-to-End Korean Speech Recognition**, arXiv, 2009.03092	