

Jihwan Lee

University of Southern California – Los Angeles, USA

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Research Interests

Speech AI, Speech Representation, Speech Generation, Biosignal-to-Speech, Brain-Computer Interface, Articulatory Phonology, Human-Computer Interaction, Electromyography (EMG), Electroencephalography (EEG), Cognitive Neuroscience, Streaming, Music Generation

Education

University of Southern California

Ph.D. Student, Advisor: Prof. Shrikanth Narayanan

Signal Analysis and Interpretation Lab (SAIL), Electrical and Computer Engineering

Los Angeles, USA

Aug. 2023–Present

Seoul National University

B.S. in Electrical and Computer Engineering; B.A. in Linguistics

GPA: 3.9/4.3; summa cum laude

Seoul, South Korea

Feb. 2021

Experience

Signal Analysis and Interpretation Lab (SAIL), University of Southern California

Ph.D. Student, Advisor: Prof. Shrikanth Narayanan

Los Angeles, USA

Aug. 2023–Present

- **Real-time Voice Conversion:** [Student Lead] Spoken Human Signal Anonymization and Disentanglement for the Obfuscation of Various Voice Attributes. (IARPA ARTS Project)
- **Brain signals (EEG):** Multimodal integration of neural and biobehavioral signals for predicting preconscious responses. (DARPA NEAT Program)
- **Articulatory:** Structured variability in vocal tract articulation dynamics in speech. (NSF Project)
- **AI Conversation:** AI agent conversational interactions. (Walt Disney Company)

Audio and Acoustics Research Group, Microsoft Research

Research Intern, Supervisors: Dr. Hannes Gamper, Dr. Ivan Tashev

Redmond, WA, USA

Jun. 2026–Aug. 2026

- **Real-time interactive music generation:** Developed an interactive, real-time, low-latency music generation system that responds to live user input.

Language and Voice Team, Samsung Research

Researcher, Supervisor: Dr. Chanwoo Kim

Seoul, South Korea

Jan. 2021–Aug. 2023

- **Speech Synthesis:** Developed personalized, multi-lingual, multi-style text-to-speech systems.
- **Digital Human/Robot:** Deployed speech synthesis systems on digital avatars and robots for CES demos.

Vision and Learning Lab, Seoul National University

Research Assistant Intern, Advisor: Prof. Gunhee Kim

Seoul, South Korea

Jun. 2020–Dec. 2020

- **Text Generation:** Researched methods to mitigate repetition in text decoders in pretrained language models.

Computational Linguistics Lab, Seoul National University

Research Assistant Intern, Advisor: Prof. Hyopil Shin

Seoul, South Korea

Feb. 2020–Jun. 2020

- **Language Model:** Evaluated KR-BERT, a Korean pretrained language model, on diverse downstream tasks.

Security Lab, Samsung Research

Software Engineer Intern, Supervisor: Dr. Taeho Kgil

Seoul, South Korea

Jun. 2019–Aug. 2019

- **Security:** Assisted in designing automated processes for defending against WiFi attacks.

Qraft Technologies

Software Engineer Intern

Seoul, South Korea

Dec. 2018–Apr. 2019

- **Finance:** Designed a short-term currency exchange rate prediction system.

Publications

Speech Articulatory Brain Biosignal Jihwan Lee*, Parsa Razmara*, Kevin Huang*, Sean Foley, Aditya Kommineni, Haley Hsu, Woojae Jeong, Prakash Kumar, Xuan Shi, Yoonjeong Lee, Tiantian Feng, Takfarinas Medani, Ye Tian,

Sudarsana Reddy Kadiri, Krishna S. Nayak, Dani Byrd, Louis Goldstein, Richard M. Leahy, Shrikanth Narayanan, “*An Approach to Simultaneous Acquisition of Real-Time MRI Video, EEG, and Surface EMG for Articulatory, Brain, and Muscle Activity During Speech Production*”, Interspeech 2026

Speech **Articulatory** **Jihwan Lee**, Sean Foley, Thanathai Lertpetchpun, Kevin Huang, Yoonjeong Lee, Tiantian Feng, Louis Goldstein, Dani Byrd, Shrikanth Narayanan, “*ARTI-6: Towards Six-dimensional Articulatory Speech Encoding*”, ICASSP 2026

Speech Tiantian Feng, **Jihwan Lee**, Anfeng Xu, Yoonjeong Lee, Thanathai Lertpetchpun, Xuan Shi, Helin Wang, Thomas Thebaud, Laureano Moro-Velazquez, Dani Byrd, Najim Dehak, Shrikanth Narayanan, “*Vox-Profile: A Speech Foundation Model Benchmark for Characterizing Diverse Speaker Traits and Speech Properties*”, DMLR 2026

Speech **Articulatory** Sean Foley, **Jihwan Lee**, Kevin Huang, Xuan Shi, Yoonjeong Lee, Louis Goldstein, Shrikanth Narayanan, “*A long-form single-speaker real-time MRI speech dataset and benchmark*”, ICASSP 2026

Speech Thanathai Lertpetchpun, Yoonjeong Lee, Thanapat Trachu, **Jihwan Lee**, Tiantian Feng, Dani Byrd, Shrikanth Narayanan, “*Quantifying Speaker Embedding Phonological Rule Interactions in Accented Speech Synthesis*”, ICASSP 2026

Speech **Articulatory** Jay Park, Hong Nguyen, Sean Foley, **Jihwan Lee**, Yoonjeong Lee, Dani Byrd, Shrikanth Narayanan, “*Interpretable Modeling of Articulatory Temporal Dynamics from real-time MRI for Phoneme Recognition*”, ICASSP 2026

Speech Tiantian Feng, Kevin Huang, Anfeng Xu, Xuan Shi, Thanathai Lertpetchpun, **Jihwan Lee**, Yoonjeong Lee, Dani Byrd, Shrikanth Narayanan, “*Voxlect: A Speech Foundation Model Benchmark for Modeling Dialects and Regional Languages Around the Globe*”, KDD 2026.

Speech **Jihwan Lee**, Tiantian Feng, Minu Kim, Junhyeok Lee, Sean Foley, Thanathai Lertpetchpun, Najim Dehak, Dani Byrd, Shrikanth Narayanan, “*Probing Neural Audio Codecs with Speaker Traits and Speech Characteristics*”, arXiv:2610.20955, 2026.

Biosignal **Streaming** **Jihwan Lee**, Kleanthis Avramidis, Junhyeok Lee, Tiantian Feng, Najim Dehak, Shrikanth Narayanan, “*MyoCodec: A Streaming Neural Codec for Electromyography*”, arXiv:2609.36687, 2026.

Music **Streaming** **Jihwan Lee**, Hannes Gamper, “*RTMS: Toward Real-Time Music Sketching*”, under review for ICASSP 2027, 2026.

Speech **Streaming** Junhyeok Lee, Xiluo He, **Jihwan Lee**, Helin Wang, Shrikanth Narayanan, Thomas Thebaud, Laureano Moro-Velazquez, Jesús Villalba, Najim Dehak, “*Reconstruct! Don’t Encode: Self-Supervised Representation Reconstruction Loss for High-Intelligibility and Low-Latency Streaming Neural Audio Codec*”, arXiv:2603.05887

Speech Minu Kim, **Jihwan Lee**, David R. Mortensen, Shrikanth Narayanan, “*Mitigating Accent-Language Confusion in Self-Supervised Speech Representations for Language Identification*”, arXiv:2610.09486, 2026.

Speech Thanathai Lertpetchpun, Yoonjeong Lee, **Jihwan Lee**, Tiantian Feng, Dani Byrd, Shrikanth Narayanan, “*Learning-free L2-Accented Speech Generation using Phonological Rules*”, arXiv:2603.07550

Speech Thanathai Lertpetchpun, Thanapat Trachu, **Jihwan Lee**, Tiantian Feng, Dani Byrd, Shrikanth Narayanan, “*Accent Vector: Controllable Accent Manipulation for Multilingual TTS Without Accented Data*”, arXiv:2603.07534

Speech **Biosignal** Simon Pistrosch*, Kleanthis Avramidis*, Zhao Ren, Tiantian Feng, **Jihwan Lee**, Monica Gonzalez-Machorro, Anton Batliner, Tanja Schultz, Shrikanth Narayanan, Björn W. Schuller, “*Affect Decoding in Phonated and Silent Speech Production from Surface EMG*”, arXiv:2603.11715, 2026.

Speech **Articulatory** **Biosignal** **Jihwan Lee**, Kevin Huang, Kleanthis Avramidis, Simon Pistrosch, Monica Gonzalez-Machorro, Yoonjeong Lee, Björn W. Schuller, Louis Goldstein, Shrikanth Narayanan, “*Articulatory Feature Prediction from Surface EMG during Speech Production*”, Interspeech 2025.

Speech **Articulatory** **Award** Kevin Huang, Sean Foley, **Jihwan Lee**, Yoonjeong Lee, Dani Byrd, Shrikanth Narayanan, “*On the Relationship between Accent Strength and Articulatory Features*”, Interspeech 2025, **[Best Student Paper Award]**

Speech **Brain** **Biosignal** **Jihwan Lee**, Tiantian Feng, Aditya Kommineni, Sudarsana Reddy Kadiri, Shrikanth Narayanan, “*Enhancing Listened Speech Decoding from EEG via Parallel Phoneme Sequence Prediction*”, ICASSP 2025.

Brain **Biosignal** Kleanthis Avramidis, Tiantian Feng, Woojae Jeong, **Jihwan Lee**, Wenhui Cui, Richard M. Leahy, Shrikanth Narayanan, “*Neural Codecs as Biosignal Tokenizers*”, arXiv:2510.09095

Speech **Articulatory** Sean Foley, Hong Nguyen, **Jihwan Lee**, Sudarsana Reddy Kadiri, Dani Byrd, Louis Goldstein, Shrikanth Narayanan, “*Towards disentangling the contributions of articulation and acoustics in multimodal phoneme recognition*”, arXiv:2505.24059, 2025.

Speech **Articulatory** Xuan Shi, Tiantian Feng, Kevin Huang, Sudarsana Reddy Kadiri, **Jihwan Lee**, Yijing Lu, Yubin Zhang, Louis Goldstein, Shrikanth Narayanan, “*Direct articulatory observation reveals phoneme recognition performance characteristics of a self-supervised speech model*”, JASA Express Letters, 2024.

Speech **Brain** **Jihwan Lee**, Aditya Kommineni, Tiantian Feng, Kleanthis Avramidis, Xuan Shi, Sudarsana Kadiri, Shrikanth Narayanan, “*Toward Fully-End-to-End Listened Speech Decoding from EEG Signals*”, Interspeech 2024.

Speech Jesús Villalba, Tiantian Feng, Thomas Thebaud, **Jihwan Lee**, Shrikanth Narayanan, Najim Dehak, “*The SHADOW Team Submission to the ASVSpooF 2024 Challenge*”, Interspeech 2024 ASVSpooF Challenge.

Speech Heejin Choi, Jae-Sung Bae, Joun Yeop Lee, Seongkyu Mun, **Jihwan Lee**, Hoon-Young Cho, Chanwoo Kim, “*MELS-TTS: Multi-Emotion Multi-Lingual Multi-Speaker Text-To-Speech System Via Disentangled Style Tokens*”, ICASSP 2024.

Speech Joun Yeop Lee, Jae-Sung Bae, Seongkyu Mun, **Jihwan Lee**, Ji-Hyun Lee, Hoon-Young Cho, Chanwoo Kim, “*Hierarchical Timbre-Cadence Speaker Encoder for Zero-shot Speech Synthesis*”, Interspeech 2023.

Speech **Jihwan Lee**, Jae-Sung Bae, Seongkyu Mun, Heejin Choi, Joun Yeop Lee, Hoon-Young Cho, Chanwoo Kim, “*An Empirical Study on L2 Accents of Cross-lingual Text-to-Speech Systems via Vowel Space*”, arXiv:2211.03078, 2022.

Speech **Jihwan Lee**, Joun Yeop Lee, Heejin Choi, Seongkyu Mun, Sangjun Park, Jae-Sung Bae, Chanwoo Kim, “*Into-TTS: Intonation Template Based Prosody Control System*”, arXiv:2204.01271, 2022.

Speech Seongkyu Mun, Dhananjaya Gowda, **Jihwan Lee**, Changwoo Han, Dokyun Lee, Chanwoo Kim, “*Prototypical speaker-interference loss for target voice separation using non-parallel audio samples*”, Interspeech 2022.

Patents

US Patent: **Jihwan Lee**, Joun Yeop Lee, Heejin Choi, Seongkyu Mun, “*Electronic device and control method thereof*”, US12573375B2, Filed 2023-03-28, Published 2023-10-12, Granted 2026-03-10

US Patent: Heejin Choi, Jae-Sung Bae, Joun Yeop Lee, Seongkyu Mun, **Jihwan Lee**, Kihyun Choo, “*Electronic device for obtaining synthesized speech by considering emotion and control method therefor*”, US20250191572A1, Priority 2022-10-25, Filed 2025-02-20, Published 2025-06-12 (Pending)

Awards

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| ○ Best Student Paper Award 🏆, Interspeech | 2025 |
| ○ Center for Computational Language Sciences (CCLS) Seed Funding (\$3,000) | 2024 |
| ○ Travel Grant by University of Southern California | 2023 |
| ○ Annenberg Fellowship | 2023 |
| ○ 1st Place at Samsung Research Business Idea Contest | 2021 |
| ○ Summa Cum Laude (Seoul National University) | 2021 |
| ○ Samsung Scholarship (approx. \$20,000) | 2019 |

Service

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| ○ SLT 2026 Reviewer | 2026 |
| ○ Interspeech 2026 Reviewer | 2026 |
| ○ ICASSP 2026 Reviewer | 2025 |
| ○ Organizing Team at <i>Mapping Brain-Body-Behavior Signal Dynamics in Human Speech Production and Interaction</i> , ICASSP 2025 Satellite Workshop | 2025 |
| ○ Social Chair Deputy at SAIL | 2024 |
| ○ Military Duty (Republic of Korea) | 2015–2017 |