Taejin Park

Personal Data

email: taejinpa@usc.edu, tango4j@gmail.com
Phone: +1 213 618 2653
Github: github.com/tango4j

Education and Work Experience

May 2021 - Present	**NVIDIA** Santa Clara Conversational AI Deep Learning Applied Scientist
Aug 2016 - Present	**University of Southern California (USC)** **PhD Student in Dept. of ECE, Master Student in Dept. of CS** Signal Analysis and Interpretation Laboratory (**SAIL**) Laboratory
Internship	**Microsoft: Cognitive Services Research** May 2020 - Aug 2020, Research Intern Research on Federated Continual Learning **Amazon: Alexa Speech** May 2019 - Aug 2019, Applied Scientist Intern Research on the ASR system for Amazon Alexa devices **Capio Inc.** May 2018 - Aug 2018, Intern Research on speaker diarization system that exploits lexical information from ASR
Mar 2012 - Jul 2016	**Researcher at ETRI** Electronics and Telecommunications Research Institute (ETRI), Republic of Korea
Mar 2010 - Feb 2012	**MS, Seoul National University (SNU)** **Electrical Engineering and Computer Science** **MS Thesis:** "Localization of Mono Microphone with Stereo Loudspeaker Using Hidden Time Synchronization Signal in Audio"
Mar 2005 - Feb 2010	**BS, Seoul National University (SNU)** **Electrical Engineering**

Publications

click the titles to see the papers

Peer-reviewed Conference & Workshop papers

Jun 2021 — Taejin Park, Manoj Kumar and Shrikanth Narayanan, "**Multiscale Speaker Diarization with Neural Affinity Score Fusion**" in: Proceedings of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Toronto, Canada, Jun, 2021.

May 2020 — Taejin Park, Kenichi Kumatani, Minhua Wu and Shiva Sundaram "**Robust Multi-channel Speech Recognition using Frequency Aligned Network,**" in: Proceedings of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Barcelona, Spain, May, 2020.

May 2020 — Nallan Chakravarthula, Sandeep, Md Nasir, Shao-Yen Tseng, Haoqi Li, Taejin Park, Brian Baucom, Craig J. Bryan, Shrikanth Narayanan, and Panayiotis Georgiou. "**Automatic prediction of suicidal risk in military couples using multimodal interaction cues from couples conversations,**" in: Proceedings of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Barcelona, Spain, May, 2020.

Sep 2019 Taejin Park, Kyu Han, Jing Huang, Xiaodong He, Bowen Zhou, Panayiotis Georgiou and Shrikanth Narayanan, "**Speaker Diarization with Lexical Information**" in: Proceedings of Interspeech, Graz, Austria, Sep, 2019.

Sep 2019 Taejin Park, Manoj Kumar, Nikolaos Flemotomos, Monisankha Pal, Raghuveer Peri, Rimita Lahiri, Panayiotis Georgiou and Shrikanth Narayanan, "**The Second DIHARD challenge: System Description for USC-SAIL Team**" in: Proceedings of Interspeech, Graz, Austria, Sep, 2019.

Sep 2019 Arindam Jati, Raghuveer Peri, Monisankha Pal, Taejin Park, Naveen Kumar, Ruchir Travadi, Panayiotis Georgiou and Shrikanth Narayanan, "**Multi-task Discriminative Training of Hybrid DNN-TVM Model for Speaker Verification with Noisy and Far-Field Speech**"in: Proceedings of Interspeech, Graz, Austria, Sep, 2019.

Sep 2018 Taejin Park and Panayiotis Georgiou, "**Multimodal Speaker Segmentation and Diarization using Lexical and Acoustic Cues via Sequence to Sequence Neural Networks**" in: Proceedings of Interspeech, Hyderabad, India, Sep, 2018

Apr 2018 Taejin Park and Panayiotis Georgiou, "**Multistream Diarization Fusion Using The Minimum Variance Bayesian Information Criterion,**" in: Proceedings of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Calgary, Canada, May, 2018.

Sep 2015 Taejin Park, Seungkwon Beack, and Taejin Lee, "**Noise Robust Audio Fingerprint Extraction technique on Mobile Device Using Gradient Histogram,**" in: Proceedings of International Conference on Consumer Electronics (ICCE), Berlin, Germany, Sep, 2015.

Sep 2014 Taejin Park, Seungkwon Beack, and Taejin Lee, "**Noise robust feature for automatic speech recognition based on Mel-spectrogram gradient histogram,**" in: Proceedings of ISCA/IEEE Workshop on Speech, Language and Audio in Multimedia (SLAM), Penang, Malaysia, Sep, 2014.

Jun 2014 Taejin Park and Kyeong Ok Kang, "**Background Music Separation for Multichannel Audio Based on Inter-channel Level Vector Sum,**" in: Proceedings of IEEE International Symposium on Consumer Electronics (ISCE), Jeju Island, Korea, Jun, 2014.

May 2013 Taejin Park and Kyeong Ok Kang, "**Position Estimation Using A Microphone And Stereo Loudspeaker With An Audio-embedded Hidden Time Synchronization Signal,**" in: Proceedings of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Vancouver, Canada, May, 2013.

Journal Articles

Submitted Taejin Park, Naoyuki Kanda, Dimitrios Dimitriadis, Kyu Han, Shinji Watanabe and Shrikanth Narayanan, "**A Review of Speaker Diarization: Recent Advances with Deep Learning**" Computer Speech and Language, Under Review Process

Dec 2019 Taejin Park, Kyu Han, Manoj Kumar and Shrikanth Narayanan, "**Auto-Tuning Spectral Clustering for Speaker Diarization Using Normalized Maximum Eigengap**" IEEE Signal Processing Letters. 2019, p.381-385

Sep 2014 Taejin Park, Seungkwon Beack and Taejin Lee, "**Noise Robust Automatic Speech Recognition Scheme with Histogram of Oriented Gradient Features,**" IEIE Transactions on Smart Processing & Computing, Vol.3 No.4, 2014.10, 259-266.

Non peer-reviewed Conference Articles

Oct 2015 Taejin Park and Taejin Lee, "and Taejin Lee, "**Music-noise Segmentation In Spectro-temporal Domain Using Convolutional Neural Networks,**" Late-breaking and Demo Session in: International Society of Music Information Retrieval (ISMIR), Malaga, Spain, Sep, 2015.

ArXiv Preprints

Dec 2015 Taejin Parkand Taejin Lee, "**Musical Instrument Classification With Deep Convolutional Neural Networks Using Combined Feature Approach,**" in: arXiv:1512.07370 [cs.SD].

Dec 2015 Taejin Parkand Taejin Lee, "**Multichannel audio signal source separation based on an Interchannel Loudness Vector Sum,**" in: arXiv:1512.08075 [cs.SD].

Research Interests

Theory:	Deep Neural Network, Spectral Clustering
Applications:	Speaker Diarization, Speaker Recognition, Automatic Speech Recognition (ASR)

Skills

Language:	Python, Bash, Matlab, C++
Deep Learning Framework:	Pytorch, Tensorflow
Software:	Kaldi
Operating System:	Ubuntu Linux

Graduate Coursework

University of Southern California	Deep learning and its applications Analysis of Algorithm Applied Natural Language Processing Advanced Natural Language Processing Foundations of Artificial Intelligence Mathematical Pattern Recognition Machine Learning from Signals: Foundations and Methods Random Processes in Engineering Probability for Electrical and Computer Engineers Database Systems Introduction to Digital Signal Processing
Seoul National University	Random Signal Theory Detection and Estimation Applied Acoustics Speech Signal Processing Multi-rate Signal Processing Adaptive Signal Processing

Course Projects

Machine Learning from Signals:	A study about multivariate logistic regression classifier on binary label dataset
Advanced Natural Language Processing:	English to linux-command translator using sequence to sequence models

Research Projects

AUG 2017 - PRESENT | **Technologies for Assessing Behavioral and Cognitive Markers of Suicide Risk** at USC, DOD Proposal Number: PT140188
Task: Speaker diarization and dialogue analysis

NOV 2013 - OCT 2014 | **Interactive data broadcasting service based on an audio embedded hidden signal for an enhanced accessibility** at ETRI, funded by ETRI
Task: Developed a localization system based on audio-embedded hidden signal

AUG 2010 - JAN 2011 | **Ultra sonic sensor signal processing for smart parking assistant** at SNU, funded by MANDO Corp.
Task: Implemented a signal processing module for parking assistant.

MAR 2010 - AUG 2010 | **Post processing and system identification for an acoustic echo canceller** at SNU, funded by Mightyworks Corp.
Task: Developed and improved a system identification method for echo canceller.