Cheng-I Jeff Lai

CONTACT INFORMATION

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RESEARCH INTERESTS

Deep Learning, Speech Processing, Speaker Recognition, Neural Machine Translation, Speech Synthesis

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA — 2019 - Present
Ph.D. in Computer Science
Advisor: Dr. Jim Glass

Johns Hopkins University, Baltimore, MD — 2015 - 2018
B.S. in Electrical Engineering
Advisors: Prof. Najim Dehak and Dr. Jesús Villalba

PUBLICATIONS

[1] **Cheng-I Lai**, Nanxin Chen, Jesús Villalba, Najim Dehak,. "ASSERT: Anti-Spoofing with Squeeze-Excitation and Residual neTworks," [Interspeech 2019][Code]

[2] **Cheng-I Lai**. "Contrastive Predictive Coding Based Feature for Automatic Speaker Verification," [Bachelor Thesis][Code]

[3] Kelly Marchisio, Jialiang Guo, **Cheng-I Lai**, Philipp Koehn. "Controlling the Reading Level of Machine Translation Output," [MT Summit 2019]

[4] **Cheng-I Lai**, Alberto Abad, Korin Richmond, Junichi Yamagishi, Najim Dehak, Simon King. "Attentive Filtering Network for Audio Replay Attacks Detection," [ICASSP 2019][Code]

[5] Phani Nidadavolu, **Cheng-I Lai**, Jesús Villalba, Najim Dehak. "Investigation on Bandwidth Extension for Speaker Recognition," [Interspeech 2018]

TALKS

Deep Learning Frameworks for Spoofing Detection and Speaker Representation
Biometrics Research Laboratory, NEC Corporation. — July 2019
Digital Content and Media Sciences Research Division, National Institute of Informatics. — July 2019

Deep Learning in Artificial Intelligence
College of Science and Technology, Nanhua University. — June 2019
College of Chinese Medicine, China Medical University. — May 2019

Attentive Filtering Network for Audio Replay Attacks Detection
Gulf Coast Undergraduate Research Symposium, Rice University. — October 2018
Center for Language and Speech Processing, Johns Hopkins University. — October 2018
Centre for Speech Technology Research, University of Edinburgh. — August 2018

RESEARCH EXPERIENCES

Research Intern — Summer 2019
National Institute of Informatics, Japan
Advisor: Prof. Junichi Yamagishi
- Designed and integrated speaker encoders for multi-speaker Tacotron2 framework.

Research Assistant — September 2016 - May 2019
Center for Language and Speech Processing (CLSP), Johns Hopkins University
Advisors: Prof. Najim Dehak and Dr. Jesús Villalba
- Investigated DNN frameworks for ASVspoof 2019 Challenge.
- Built a speaker recognition system based on contrastive predictive coding features.
- Integrated DNN-based bandwidth extension network for speaker recognition systems.
- Designed automatic speech biomarkers with acoustic model for Parkinson's disease detection.
- Applied CNN and RNN to voice activity detection of noisy speeches.
- Speech gender identification with bottleneck features and linear discriminant analysis.

Research Intern Summer 2018
Informatics Forum, University of Edinburgh
Advisors: Prof. Simon King and Prof. Korin Richmond
- Proposed Attentive Filtering Network for audio replay attacks detection and achieved 30% relative improvement over the enhanced baseline system on ASVspoof 2017 Version 2.0 dataset.

Research Intern Summer 2017
Human Language Technology Center of Excellence (HLTCOE), Johns Hopkins University
Advisors: Prof. Najim Dehak and Dr. Jesús Villalba
- Investigated audio event classification with LSTM and HMM for National Institute of Standards and Technology OpenSat evaluation.

AWARDS

Merrill Lynch Fellowship, Department of Electrical Engineering and Computer Science, MIT 2019-2020
Departmental and General Honors, Johns Hopkins University 2019
Third Place, 2019 Automatic Speaker Verification Spoofing and Countermeasures Challenge 2019
Travel Grant, Gulf Coast Undergraduate Research Symposium, Rice University 2018
Vredenburg Scholarship, Johns Hopkins University 2018
Idea Lab Diversity Innovation Grants Winner, Johns Hopkins University 2016
Winner of MedHacks and Best with Wolfram API Tech Award 2016
Student Initiative Fund and Digital Da Vinci Award, Johns Hopkins University 2016
Dean's List (All semesters), Johns Hopkins University 2015-2018

TEACHING EXPERIENCE

Teaching Assistant, Johns Hopkins University Spring 2018
Computational Modeling for Electrical and Computer Engineering
Instructor: Prof. Najim Dehak

Teaching Assistant, Johns Hopkins University Spring 2017
Probability and Statistics for the Life Sciences
Instructor: Dr. Prashant Athavale

SKILLS

Computer Skills:
- Proficient: Python, Shell, MATLAB, GPU computing, Large-scale data processing
- Familiar: LaTeX, Java, R

Programming Frameworks:
Kaldi, PyTorch, Keras, scikit-learn

Languages:
Mandarin (native), English (fluent)