

# Haoqi Li

✉ haoqilele@gmail.com

🌐 [haoqilele.github.io](https://haoqilele.github.io)    🎓 [Google Scholar](#)    [LinkedIn](#)

## PROFILE

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I'm an applied scientist in the Amazon AWS AI speech team. Before that, I obtained Ph.D. in Electrical Engineering at University of Southern California.

My research focuses machine/deep learning on human speech related areas, including speech signal processing, speech recognition, speaker recognition, affective computing, and natural language processing.

## EDUCATION

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**University of Southern California**, Los Angeles, USA

**Ph.D.** in Electrical Engineering Aug. 2014 - Nov. 2020

**Dissertation:** "Behavior understanding from speech under constrained conditions: exploring sparse networks, transfer and unsupervised learning"

**Advisors:** Shrikanth Narayanan and Panayiotis Georgiou

**M.S.** in Computer Science Aug. 2017 - May 2018

**Chinese Academy of Sciences**, Beijing, China

**M.S.** in Signal and Information Processing Aug. 2011 - Jun. 2014

**Xidian University**, Xi'an, China

**B.S.** in Electronic Information Engineering Aug. 2007 - Jun. 2011

Overall GPA: 91.3/100 (Rank 1/220)

## EXPERIENCE

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**Amazon AWS AI** Jan. 2021 - Present  
*Applied Scientist* New York, NY, USA

Building AI-enabled cloud services driven by large-scale machine learning, speech processing and natural language understanding:

- **Amazon Connect Voice ID:** Real-time caller authentication and fraud risk detection using ML-powered voice analysis
- **Amazon Transcribe:** Automatic speech recognition(ASR) service, which converts audio to text and creates applications that incorporate the content of audio files.

**University of Southern California, SAIL** Aug. 2014 - Nov. 2020  
*Research Assistant* Los Angeles, CA, USA

Worked on deep learning techniques for modeling human behaviors from speech and language to improve well-being and identify psychological disorders. Investigated **sparse networks**, **transfer learning** and **unsupervised learning** under constrained **low-resource** data conditions. My representative works are:

- Linking emotions to behaviors: A novel framework that investigates the inferential capacity and contextual importance between emotions and behaviors via deep transfer learning.
- Beh2Vec: A novel model that focuses on unsupervised speech representation learning for behavior modeling using triplet enhanced contextualized networks.
- SD-DNN: Sparsely connected and disjointly trained deep neural networks for low resource behavioral annotation.

## Amazon Lab126

*Applied Scientist Intern*

May. 2020 - Aug. 2020

*Sunnyvale, CA, USA*

Designed a **domain-adaptation** multimodality emotion recognition model on audio-visual data for human-robot interaction purpose.

- Explored domain transfer learning techniques on emotional utterances collected under different emotion elicitation approaches, particularly with limited labeled target samples.
- Technical paper will be presented at Interspeech 2021.

## JD AI Research - JD.com

*Research Intern*

May. 2018 - Aug. 2018

*Mountain View, CA, USA*

Worked on voice conversion, end-to-end Text-to-Speech (TTS) and **speaker-invariant emotion representation learning**.

- Implemented and optimized **Chinese Text-to-Speech** systems based on Voiceloop.
- Designed the neural network for extracting speaker-invariant emotion representations from speech via **adversarial training**.
- Technical paper was presented at ICASSP 2020.

## SONY Playstation Acoustic Analysis Group

*Research Intern*

May. 2018 - Aug. 2018

*San Mateo, CA, USA*

Worked on the prediction of funny movie scenes.

- Designed a **reinforcement learning framework** for affective detection from movie footage
- Technical paper was presented at ICASSP 2018.

## PUBLICATIONS

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### Journal Publications:

- [1] **Haoqi Li**, Brian Baucom, Panayiotis Georgiou. "Linking emotions to behaviors through deep transfer learning." PeerJ Computer Science 6:e246, 2020.
- [2] **Haoqi Li**, Brian Baucom, Shrikanth Narayanan, Panayiotis Georgiou. "Unsupervised Speech Representation Learning for Behavior Modeling using Triplet Enhanced Contextualized Networks." Computer Speech and Language, Volume 70, 2021,101226.
- [3] Prashanth Gurunath Shivakumar, **Haoqi Li**, Kevin Knight, and Panayiotis Georgiou. "Learning from Past Mistakes: Improving Automatic Speech Recognition Output via Noisy-Clean Phrase Context Modeling." APSIPA Transactions on Signal and Information Processing Vol.8 2019.

### Conference Publications:

- [1] Mufan Sang, **Haoqi Li**, Fang Liu, Andrew O. Arnold, Li Wan. "Self-Supervised Speaker Verification with Simple Siamese Network and Self-Supervised Regularization." ICASSP, 2022.
- [2] **Haoqi Li**, Yelin Kim, Cheng-Hao Kuo, Shrikanth Narayanan. "Acted vs. Improvised: Domain Adaptation for Elicitation Approaches in Audio-Visual Emotion Recognition." Interspeech 2021.
- [3] **Haoqi Li**, Ming Tu, Jing Huang, Shrikanth Narayanan, Panayiotis Georgiou. "Speaker-invariant Affective Representation Learning via Adversarial Training." ICASSP, 2020.
- [4] Sandeep Nallan Chakravarthula, Md Nasir, Shao-Yen Tseng, **Haoqi Li**, Tae Jin Park, Brian Baucom, Craig J Bryan, Shrikanth Narayanan, Panayiotis Georgiou. "Automatic prediction of suicidal risk in military couples using multimodal interaction cues from couples conversations." ICASSP, 2020.

- [5] Raghuvveer Peri, **Haoqi Li**, Krishna Somandepalli, Arindam Jati, Shrikanth Narayanan. “An Empirical Analysis of Information Encoded in Disentangled Neural Speaker Representations.” Odyssey: The Speaker and Language Recognition Workshop, 2020.
- [6] **Haoqi Li\***, Sandeep Nallan Chakravarthula\*, Shao-Yen Tseng, Maija Reblin, Panayiotis Georgiou (\*Equal Contribution). “Predicting Behavior in Cancer-Afflicted Patient and Spouse Interactions using Speech and Language.” Interspeech, 2019.
- [7] **Haoqi Li\***, Shao-Yeng Tseng\*, Brian Baucom, and Panayiotis Georgiou (\*Equal Contribution). “Honey, I Learned to Talk”: Multimodal Fusion for Behavior Analysis. In Proceedings of the 20th ACM International Conference on Multimodal Interaction (ICMI), 2018.
- [8] **Haoqi Li**, Naveen Kumar, Ruxin Chen, Panayiotis Georgiou. “A Deep Reinforcement Learning Framework for Identifying Funny Scenes in Movies.” ICASSP, Calgary, Alberta, Canada, 2018.
- [9] **Haoqi Li**, Brian Baucom, Panayiotis Georgiou. “Unsupervised Latent Behavior Manifold Learning from Acoustic Features: audio2behavior.” ICASSP, New Orleans, LA, USA, 2017.
- [10] **Haoqi Li**, Brian Baucom, Panayiotis Georgiou. “Sparsely Connected and Disjointly Trained Deep Neural Networks for Low Resource Behavioral Annotation: Acoustic Classification in Couples’ Therapy.” Interspeech, San Francisco, CA, USA, 2016.
- [11] Xin Liu, **Haoqi Li**, Haibin Wang. “Probability Constrained Robust Multicast Beamforming in Cognitive Radio Network.” International Conference on Communications and Networking in China (ChinaCom), Guilin, China, 2013. (**Best Student Paper Award**)

## PATENTS

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- [1] Ruxin Chen, Naveen Kumar, **Haoqi Li**. “Deep reinforcement learning framework for characterizing video content.” U.S. Patent granted US10885341B2, 2021.

## TEACHING EXPERIENCE

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<b>Teaching Assistant, University of Southern California</b>	Fall 2019
<i>EE 660 Machine Learning from Signals: Foundations and Methods</i>	
Instructed by Prof. Keith Jenkins	
<b>Teaching Assistant, University of Southern California</b>	Spring 2018
<i>EE 503 Probability for Electrical and Computer Engineers</i>	
Instructed by Prof. Vijay Kumar	

## ACADEMIC SERVICE

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### Reviewer

International Conference on Acoustics, Speech, Signal Processing (ICASSP)  
 Conference of the International Speech Communication Association (Interspeech)  
 International Conference on Affective Computing Intelligent Interaction (ACII)  
 ACM International Conference on Multimodal Interaction (ICMI)  
 IEEE Transactions on Affective Computing  
 IEEE Transactions on Multimedia  
 IEEE Signal Processing Letters  
 IEEE Access  
 Computer Speech and Language  
 APSIPA Transactions on Signal and Information Processing

## HONORS AND AWARDS

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ICASSP 2020 Student Travel Grant	IEEE SPS, 2020
National Scholarship for Graduate Students	Ministry of Education of China, 2013
Merit Student of University of Chinese Academy of Sciences	2012
Outstanding Graduate in Shaanxi Province	2011
Outstanding Graduate of Xidian University	2011
National Scholarship of China (Top 1%)	Ministry of Education of China, 2009
Undergraduate Mathematical Contest in Modeling(CUMCM), 1st Prize in Shaanxi Province	2009
Outstanding Students Scholarship of Xidian University	2009-2011
Excellent Freshman Scholarship of Xidian University	2008

## TECHNICAL SKILLS

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<b>Programming Languages</b>	Python, Matlab, Java, C++, Bash Scripting, HTML/CSS, JavaScript
<b>Tools</b>	PyTorch, Kaldi, Linux, AWS, Git, Docker, openSMILE