ZHUOHUANG ZHANG

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EDUCATION

Indiana University Bloomington *August 2017 - Present*
Doctor of Philosophy
Dual major: Computer Science, Speech and Hearing Sciences
Advisors: Prof. Donald S. Williamson, Prof. Yi Shen

University of Rochester *August 2015 - May 2017*
Master of Science
Electrical and Computer Engineering
Advisor: Prof. Zhiyao Duan

Beijing Institute of Technology *August 2011 - June 2015*
Bachelor of Engineering
Opto-Electrical Information Engineering

POSITIONS HELD

Indiana University Bloomington

- Research Assistant *Fall 2018 - Present*
  - Speech enhancement algorithms for hearing-impaired listeners
  - Speech perception on phase distorted speech for hearing-impaired listeners
- Associate Instructor *Spring 2020*
  - CSCI B-455 Principles of Machine Learning, Department of Computer Science

Tencent

- Research Intern *May 2020 - October 2020*
  - Tencent AI Lab, Bellevue, WA, USA
  - All deep learning MVDR beamformer [url]
  - Publication: conference paper [url], journal paper [url]
- Supervisor: Dr. Yong Xu
- Manager: Dr. Dong Yu

DiDi Chuxing

- Research Intern *Summer 2019*
  - DiDi AI Labs, Beijing, China
  - GAN-based speech enhancement project
  - Publication [url]
- Supervisor: Dr. Hui Song
- Manager: Dr. Xiangang Li

PUBLICATIONS

Manuscripts:

- **Zhuohuang Zhang**, Yong Xu, Meng Yu, Shi-Xiong Zhang, Lianwu Chen, Donald S. Williamson, Dong Yu. *Multi-channel Multi-frame ADL-MVDR for Target Speech Separation.* In review, submitted to IEEE/ACM TASLP.
- Yong Xu*, **Zhuohuang Zhang***, Meng Yu, Shi-Xiong Zhang, Lianwu Chen, Dong Yu. *Generalized RNN Beamformer for Target Speech Separation.* In preparation. (* Equal contribution)

Conference Papers:

- **Zhuohuang Zhang**, Yong Xu, Meng Yu, Shi-Xiong Zhang, Lianwu Chen, Dong Yu. *ADL-MVDR: All Deep Learning MVDR Beamformer for Target Speech Separation.* ICASSP 2021, Toronto, Canada (to appear).
- **Zhuohuang Zhang**, Piyush Vyas, Xuan Dong, Donald S. Williamson. *An End-to-End Non-intrusive Model For Subjective and Objective Real-world Speech Assessment using a Multi-task Framework.* ICASSP 2021, Toronto, Canada (to appear).
- **Zhuohuang Zhang**, Donald S. Williamson Yi Shen (2020). *Investigation of Phase Distortion on Perceived Speech Quality for Hearing-impaired Listeners.* Interspeech 2020, Shanghai, China.
- **Zhuohuang Zhang**, Chengyun Deng, Yi Shen, Donald S. Williamson, Yongtao Sha, Yi Zhang, Hui Song and Xiangang Li (2020). *On Loss Functions and Recurrency Training for GAN-based Speech Enhancement Systems.* Interspeech 2020, Shanghai, China.
- **Zhuohuang Zhang**, Yi Shen (2019). *Listener Preference on the Local Criterion for Ideal Binary-Masked Speech* (oral). Interspeech 2019, Graz, Austria.
- **Zhuohuang Zhang**, Donald S. Williamson, Yi Shen (2019). *Impact of Amplification on Speech Enhancement Algorithms Using an Objective Evaluation Metric* (poster). ICA 2019, Aachen, Germany.
- **Zhuohuang Zhang**, Yi Shen, Donald S. Williamson (2019). *Objective Comparison of Speech Enhancement Algorithms with Hearing Loss Simulation* (poster). ICASSP 2019, Brighton, UK.
- Zhen Tan, Lianfeng Zhao, Bolin Shan, Jing Wang, Jun Xu, **Zhuohuang Zhang** (2014). *Sulfur Passivation Enhancement for GaSb MOS Devices by Adding H2O2 to (NH4)2S Solution* (poster). IEEE SISC 2014, San Diego, USA.

Journal Papers:

- Yi Shen, Celia Zhang, **Zhuohuang Zhang** (2018). *Feasibility of interleaved Bayesian adaptive procedures in estimating the equal-loudness contour.* The Journal of the Acoustical Society of America.
- Yong Song, Qun Hao, Yue liu, Tianle Tan, **Zhuohuang Zhang** (2014). *Design and Implementation of A Retina-like Imaging System Based on Non-uniform Lens Array.* International Symposium on Optoelectronic Technology and Application, SPIE.
- Qingsheng Luo, Zhongyang Xiao, Pan Lu, **Zhuohuang Zhang**, Lei Zhao (2014). *Mechanical Design and Kinematic Analysis of a Wearable Lumbodorsal Therapeutic Instrument.* Journal of Mechanical & Electrical Engineering.

INVITED TALKS

- *Impact of phase distortion and phase-insensitive speech enhancement on speech quality perceived by hearing-impaired listeners*, 179th Meeting Acoustic Society of America, Acoustics Virtually Everywhere, 2020.
- *Monaural Speech Enhancement with Convolutional Recurrent Generative Adversarial Networks* (guest lecture), CSCI-B659: Deep Learning for Speech Processing, Indiana University Bloomington, USA, 2019.
- *Impact of Amplification on Speech Enhancement Algorithms Using an Objective Evaluation Metric* (poster), ICA 2019, Aachen, Germany, 2019.
- *Inconsistencies between the predicted qualities of enhanced speech signals from two objective metrics*, 177th Meeting Acoustic Society of America, Louisville, KY, 2019.
- *Can listeners reliably identify their preferred amplification profiles for speech listening?* (poster), 177th Meeting Acoustic Society of America, Louisville, KY, 2019.

AWARDS

$500 Research grant from Indiana Lions Speech and Hearing, Inc.	12/2020
€650 Travel grant from ISCA for Interspeech 2019	07/2019
$500 Research support Grant from IU SPHS department	02/2018
Fellowship from IU SPHS department	09/2017
20% Tuition grant from UR ECE department	09/2015

COMPUTER SKILLS

Programming Languages: Python, MATLAB, C, Bash, PostgreSQL, R, LaTeX
Deep Learning Tools: Tensorflow, PyTorch, Keras

GRADUATE COURSES

Computer Science: Machine Learning, Data Mining, Deep Learning: Speech Processing, Advanced Operating System, Algorithm Design and Analysis, Artificial Intelligence, Advanced Database Concepts

Speech and Hearing Sciences: Auditory Anatomy & Physiology, Psychoacoustics, Bayesian Data Analysis, Speech Seminar, Hearing Seminar, Instrumentation Methods, Research & Ethics in Speech, Language, and Hearing

Electrical Engineering: Audio Software Design, Digital Image Processing, Digital Signal Processing, Random Process, Audio Signal Processing, Digital Video Processing, Network Science Analytics