

# ZHUOHUANG ZHANG

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## POSITIONS HELD

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### Shenzhen Polytechnic University

- Lecturer (Tenure-track)
  - Shenzhen, China
  - School of Artificial Intelligence

*Sep. 2023 - Present*

### Tencent

- Senior Researcher
  - Shenzhen, China
  - Front-end speech processing for RTC applications
  - Speech enhancement/separation, AI-Codec, ASR

*Aug. 2022 - Jun. 2023*

- Research Intern
  - Tencent AI Lab, Bellevue, WA, USA
  - ADL-MVDR for target speech separation
  - Supervisor: [Dr. Yong Xu](#)    Manager: [Dr. Dong Yu](#)

*May. 2020 - Oct. 2020*

### Indiana University Bloomington

- Research Assistant
  - Department of Computer Science, Department of Speech, Language and Hearing Sciences
  - Speech enhancement algorithms for hearing-impaired listeners
  - Non-intrusive speech assessment
  - Speech perception on phase distorted speech for hearing-impaired listeners
  - Advisors: [Prof. Donald S. Williamson](#), [Prof. Yi Shen](#)

*Aug. 2017 - May. 2022*

- Associate Instructor
  - CSCI B-565 Data Mining
  - CSCI B-455 Principles of Machine Learning

*Fall 2021*

*Spring 2020*

### Microsoft

- Research Intern
  - Azure Cognitive Services, Redmond, WA, USA
  - All-neural beamformer for continuous speech separation
  - Supervisor: [Dr. Takuya Yoshioka](#)

*May. 2021 - Aug. 2021*

### DiDi Chuxing

- Research Intern
  - DiDi AI Labs, Beijing, China
  - GAN-based speech enhancement project
  - Supervisor: Dr. Hui Song    Manager: Dr. Xiangang Li

*Jun. 2019 - Aug. 2019*

## EDUCATION

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### Indiana University Bloomington

*Doctor of Philosophy:* Computer Science, Speech & Hearing Sciences (*Dual Major*)

June 2022

*Master of Science:* Computer Science

December 2021

Advisors: [Prof. Donald S. Williamson](#), [Prof. Yi Shen](#)

Thesis: [Investigations on the Deep Learning Based Speech Enhancement Algorithms for Hearing-impaired Population](#)

### University of Rochester

*Master of Science:* Electrical and Computer Engineering

May 2017

Advisor: [Prof. Zhiyao Duan](#)

### Beijing Institute of Technology

*Bachelor of Engineering:* Opto-Electrical Information Engineering

June 2015

## PROFESSIONAL ACTIVITIES

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### Reviewer:

- IEEE/ACM Transactions on Audio, Speech, and Language Processing (TASLP)
- European Association for Signal Processing (EURASIP) Journal on Audio, Speech, and Music Processing (JASM)
- Neural Networks
- (EURASIP & ISCA) Speech Communication
- IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)
- (ISCA) INTERSPEECH
- IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA)

### Organizing Committee:

- ConferencingSpeech 2022 Challenge (Interspeech'22) [\[url\]](#).

## PUBLICATIONS

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### Journal Articles:

- Donghyeon Yun, Yi Shen, **Zhuohuang Zhang** (2022). *Feasibility of hearing aid gain self-adjustment using speech recognition*. The Journal of the Acoustical Society of Korea.
- **Zhuohuang Zhang**, Yong Xu, Meng Yu, Shi-Xiong Zhang, Lianwu Chen, Donald S. Williamson, Dong Yu (2021). *Multi-channel Multi-frame ADL-MVDR for Target Speech Separation*. IEEE/ACM Transactions on Audio, Speech, and Language Processing.
- 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.

## Conference Papers:

- **Zhuohuang Zhang**, Donald Williamson, Yi Shen. *Investigation on the Band Importance of Phase-aware Speech Enhancement*. Interspeech 2022, Incheon, South Korea.
- Gaoxiong Yi, Wei Xiao, Yiming Xiao, Babak Naderi, Sebastian Mller, Wafaa Wardah, Gabriel Mittag, Ross Culter, **Zhuohuang Zhang**, Donald S. Williamson, Fei Chen, Fuzheng Yang and Shidong Shang. *ConferencingSpeech 2022 Challenge: Non-intrusive Objective Speech Quality Assessment (NISQA) Challenge for Online Conferencing Applications*. Interspeech 2022, Incheon, South Korea.
- **Zhuohuang Zhang**, Takuya Yoshioka, Naoyuki Kanda, Zhuo Chen, Xiaofei Wang, Dongmei Wang, Sefik Emre Eskimez. *All-neural Beamformer for Continuous Speech Separation*. ICASSP 2022, Singapore.
- Yong Xu, **Zhuohuang Zhang**, Meng Yu, Shi-Xiong Zhang, Dong Yu. *Generalized Spatio-Temporal RNN Beamformer for Target Speech Separation*. Interspeech 2021, Brno, Czech.
- **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.
- **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*. **Outstanding student paper award**, ICASSP 2021, Toronto, Canada.
- **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 H<sub>2</sub>O<sub>2</sub> to (NH<sub>4</sub>)<sub>2</sub>S Solution* (poster). IEEE SISC 2014, San Diego, USA.

## INVITED PRESENTATIONS AND TALKS

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- *Investigation on the Band Importance of Phase-aware Speech Enhancement* (oral, virtual), Interspeech 2022, Incheon, South Korea.
- *ConferencingSpeech 2022 Challenge: Non-intrusive Objective Speech Quality Assessment (NISQA) Challenge for Online Conferencing Applications* (oral, virtual), Interspeech 2022, Incheon, South Korea.
- *All-neural Beamformer for Continuous Speech Separation* (oral, virtual), IEEE ICASSP 2022, Singapore.
- *Generalized Spatio-Temporal RNN Beamformer for Target Speech Separation* (oral, virtual), Interspeech 2021, Brno, Czech.
- *ADL-MVDR: All Deep Learning MVDR Beamformer for Target Speech Separation* (oral, virtual), IEEE ICASSP 2021, Toronto, Canada.
- *An End-to-End Non-intrusive Model For Subjective and Objective Real-world Speech Assessment using a Multi-task Framework* (oral, virtual), IEEE ICASSP 2021, Toronto, Canada.
- *Investigation of Phase Distortion on Perceived Speech Quality for Hearing-impaired Listeners* (oral, virtual), Interspeech 2020, Shanghai, China.
- *On Loss Functions and Recurrency Training for GAN-based Speech Enhancement Systems* (oral, virtual), Interspeech 2020, Shanghai, China.

- *Impact of phase distortion and phase-insensitive speech enhancement on speech quality perceived by hearing-impaired listeners* (oral, virtual), 179th Meeting Acoustic Society of America, Acoustics Virtually Everywhere, 2020.
- *Listener Preference on the Local Criterion for Ideal Binary-Masked Speech* (oral), Interspeech 2019, Graz, Austria.
- *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.
- *Objective Comparison of Speech Enhancement Algorithms with Hearing Loss Simulation* (poster), IEEE ICASSP 2019, Brighton, UK.
- *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.

## HONORS, AWARDS & FELLOWSHIPS

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Larry Humes travel award, Indiana University Bloomington	Aug. 2021
Outstanding student paper award, ICASSP 2021	Jun. 2021
Research support grant from Indiana Lions Speech and Hearing, Inc.	Dec. 2020
Travel grant from ISCA for Interspeech 2019	Jul. 2019
Research support grant, Indiana University Bloomington	Feb. 2018
Fellowship, Indiana University Bloomington	Aug. 2017
Tuition grant, University of Rochester	Aug. 2015