

Kai Zhen

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POSITIONS HELD

Indiana University

- Research Assistant Spring 2018 --- present
 - Project: efficient end-to-end neural audio coding system
- Teaching Assistant Fall 2015 --- Fall 2017
 - Department of Computer Science
 - Intelligent Systems Engineering Department

LinkedIn Corporation

- Machine Learning & Relevance Intern Summer 2019
 - Ads-AI Group, Mountain View, CA
 - Supervisors: Sara Smoot, Lijun Peng, Hiroto Udagawa
 - Project: ads response rate prediction in wide-n-deep estimators and BERT
 - Standardization Group, New York City, NY Summer 2018
 - Supervisors: Xiaoqiang Luo, Deirdre Hogan
 - Project: relevance ranking for resume builder with deep neural networks
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EDUCATION

Ph.D. in Computer Science & Cognitive Science (GPA 3.95/4.0)

- Indiana University, Bloomington, United States
- Committee: Minje Kim (advisor), Robert Goldstone, Donald Williamson, Yi Shen
- Dissertation topics: Low-Power Neural Audio Coding, Psychoacoustics

M.S. in Computer Science (GPA 91.6/100)

2015

- Tsinghua University, Beijing, China

B.S. in Software Engineering (GPA 91.8/100, top 1%)

2012

- Xidian University, Xi'an, China
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PROJECT & PUBLICATION

In Submission

- [S001] Kai Zhen, Mi Suk Lee, Jongmo Sung, Seungkwon Beack, and Minje Kim, "[Efficient And Scalable Neural Residual Waveform Coding with Collaborative Quantization](#)" (submitted to ICASSP 2020).
- [S002] Kai Zhen, Mi Suk Lee, Minje Kim. "[A Dual-Stage Context Aggregation Method towards Efficient End-To-End Speech Enhancement](#)" (submitted to ICASSP 2020).

Peer Reviewed Conference Proceedings

- [C001] Kai Zhen, Jongmo Sung, Mi Suk Lee, Seungkwon Beack, and Minje Kim, "[Cascaded Cross-Module Residual Learning towards Lightweight End-to-End Speech Coding](#)," In Proc. *Annual Conference of the International Speech Communication Association (Interspeech)*, Graz, Austria, September 15-19, 2019.

Peer Reviewed Workshops & Forums

- [W001] Kai Zhen, Aswin Sivaraman, Jongmo Sung, Minje Kim. [On Psychoacoustically Weighted Cost Functions Towards Resource-efficient Deep Neural Networks for Speech Denoising](#). *The 7th Annual Midwest Cognitive Science Conference*, 2018.
- [W002] Peter Miksza, Kevin Watson, Kai Zhen, Sanna Wager, Minje Kim. Relationships between experts' subjective ratings of jazz improvisations and computational measures of melodic entropy. *The Improvising Brain III: Cultural Variation and Analytical Techniques Symposium*, Atlanta, GA, in Feb, 2017.

[W003] **Kai Zhen** and David Crandall. [Finding egocentric image topics through convolutional neural network based representations](#) (extended abstract). In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR) Workshop on Egocentric Computer Vision*, 2016.

Patents

[P001] Minje Kim, Aswin Sivaraman, **Kai Zhen**, Jongmo Sung, et al, "[Audio signal encoding method and apparatus and audio signal decoding method and apparatus using psychoacoustic-based weighted error function](#)", *US Patent Application*, US 2019 / 0164052 A1.

[P002] Minje Kim, **Kai Zhen**, Mi Suk Lee, et al, "Apparatus and Method for Speech Processing Using a Densely Connected Hybrid Neural Network," *US Patent Application* (pending), 2019

[P003] Minje Kim, **Kai Zhen**, Jongmo Sung, Mi Suk Lee, Seungkwon Beack, et al, "Method and Apparatus of Cascaded Residual Learning Pipeline for Audio Coding," *US Patent Application* (pending), 2019

PROFESSIONAL ACTIVITIES

Conference Reviewer

- IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) - 2019, 2020, *reviewer*
- Association for Advances in Artificial Intelligence (AAAI) - 2017, 2018, *sub-reviewer*

Journal Reviewer

- European Association for Signal Processing (EURASIP) Journal on Audio, Speech, and Music Processing, *reviewer*

CRAFTSMANSHIP

Deep Learning (>2 years experience)

- TensorFlow estimator, wide-n-deep model, BERT, residual learning, autoencoder, etc

Audio Signal Processing (>2 years experience)

- bitrate efficient and scalable audio/speech coding, speech enhancement;
- subjective/objective audio quality assessment;
- psychoacoustic models and optimization skills.

Big Data Processing (acquired from 2 summer internships)

- Hadoop, HDFS, Spark (PySpark).