Ashutosh Pandey

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RESEARCH INTERESTS

Speech enhancement, speaker separation, microphone array processing, robust speech recognition, active noise control

EDUCATION

Ph.D., Computer Science and Engineering — August 2016 - July 2022
The Ohio State University (OSU), Columbus, OH, USA
Advisor: Prof. DeLiang Wang
GPA: 4.0/4.0

B.Tech, Electronics and Communication Engineering — August 2011 - June 2015
Indian Institute of Technology Guwahati, Guwahati, Assam, India
Thesis: Significance of Glottal Activity Detection for Speaker Verification in Degraded and Limited Data Condition
Advisor: Prof. S.R.M. Prasanna
GPA: 8.92/10.0

PROFESSIONAL EXPERIENCE

Research Scientist — August 2022 - Present
Meta Reality Labs, Meta Platforms Inc., Redmond, Washington State, USA

Research Internship — May 2021 - July 2021
Facebook Reality Labs, Facebook Inc., Redmond, Washington State, USA
- End-to-end multichannel speech enhancement

Research Internship — May 2020 - July 2020
Video ASR, Facebook Inc., Menlo Park, California, USA
- Speech enhancement for robust automatic speech recognition

Research Internship — May 2019 - July 2019
Siri Understanding, Apple Inc., Cupertino, California, USA
- Acoustic modeling for automatic speech recognition

Graduate Research Associate — August 2017 - July 2022
Perception and Neurodynamics Laboratory (PNL), The Ohio State University, Columbus, OH, USA
- Speech enhancement, speech dereverberation, speaker separation

Research Engineer — June 2015 - June 2016
Aspiring Minds Assessment Pvt Limited
- Natural language processing and machine learning

Research Intern — May 2014 - July 2014
University of Alberta, Edmonton, Alberta, Canada
- Hardware simulation of gene regulatory networks (GRNs)
- Simulink and Modelsim

B.Tech Thesis August 2014 - April 2015
Indian Institute of Technology Guwahati, Assam, India
- Speaker verification

PUBLISHED ARTICLES

[18] **Ashutosh Pandey** and DeLiang Wang, "Attentive Training: A New Training Framework for Target-independent Speaker Extraction", in *proceedings of INTERSPEECH*, 2022, pp. 201-205.

[17] **Ashutosh Pandey**, Buye Xu, Anurag Kumar, Jacob Donley, Paul Calamia, and DeLiang Wang, "Time-domain Ad-hoc Array Speech Enhancement Using a Triple-path Network", in *proceedings of INTERSPEECH*, 2022, pp. 729-733.

[16] Hao Zhang, **Ashutosh Pandey**, and DeLiang Wang, "Attentive Recurrent Network for Low-latency Active Noise Control", in *proceedings of INTERSPEECH*, 2022, pp. 956-960.

[15] **Ashutosh Pandey** and DeLiang Wang, "Self-attending RNN for Speech Enhancement to Improve Cross-corpus Generalization", in *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, vol. 30, pp. 1374-1385, 2022.

[14] **Ashutosh Pandey**, Buye Xu, Anurag Kumar, Jacob Donley, Paul Calamia, and DeLiang Wang, "Multichannel Speech Enhancement without Beamforming", in *proceedings of ICASSP*, 2022, pp. 6502-6506.

[13] **Ashutosh Pandey**, Buye Xu, Anurag Kumar, Jacob Donley, Paul Calamia, and DeLiang Wang, "TPARN: Triple-path Attentive Recurrent Network For Time-domain Multichannel Speech Enhancement", in *proceedings of ICASSP*, 2022, 6497-6501.

[12] **Ashutosh Pandey** and DeLiang Wang, "Dense CNN with Self-Attention for Time-Domain Speech Enhancement", in *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, vol. 29, pp. 1270-1279, 2021.

[11] **Ashutosh Pandey**, Chunxi Liu, Yun Wang, and Yatharth Saraf, "Dual Application of Speech Enhancement for Automatic Speech Recognition", in *Workshop on Spoken Language Technology*, 2021, pp. 223-228.

[10] **Ashutosh Pandey** and DeLiang Wang, "Learning Complex Spectral Mapping for Speech Enhancement with Improved Cross-corpus Generalization", in *proceedings of INTERSPEECH*, 2020, pp. 4511-4515.

[9] **Ashutosh Pandey** and DeLiang Wang, "Dual-path Self-Attention RNN for Real-Time Speech Enhancement", *arXiv:2010.12713*, 2020.

[8] **Ashutosh Pandey** and DeLiang Wang, "On Cross-Corpus Generalization of Deep Learning Based Speech Enhancement", in *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, vol. 28, pp. 2489-2499, 2020.

[7] **Ashutosh Pandey** and DeLiang Wang, "Densely Connected Neural Network with Dilated Convolutions for Real-Time Speech Enhancement in the Time Domain", in

proceedings of ICASSP, 2020, pp. 6629-6633.

[6] **Ashutosh Pandey** and DeLiang Wang, "Exploring Deep Complex Networks for Complex Spectrogram Enhancement", in proceedings of *ICASSP*, 2019, pp. 6885-6889.

[5] **Ashutosh Pandey** and DeLiang Wang, "TCNN: Temporal Convolutional Neural Network for Real-Time Speech Enhancement in the Time Domain", in *proceedings of ICASSP*, 2019, pp. 6875-6879.

[4] **Ashutosh Pandey** and DeLiang Wang, "A New Framework for CNN Based Speech Enhancement in the Time Domain", in *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, vol. 27, no. 7, pp. 1179-1188, 2019.

[3] **Ashutosh Pandey** and DeLiang Wang, "A New Framework for Supervised Speech Enhancement in the Time Domain", in *proceedings of INTERSPEECH*, 2018, pp. 1136-1140.

[2] **Ashutosh Pandey** and DeLiang Wang, "On Adversarial Training and Loss Functions for Speech Enhancement", in *proceedings of ICASSP*, 2018, pp. 5414-5418.

[1] **Ashutosh Pandey**, Rohan Kumar Das, Nagraj Adiga, Naresh Gupta and S R Mahadeva Prasanna, "Significance of Glottal Activity Detection for Speaker Verification in Degraded and Limited Data Condition", in *proceedings of TENCON*, 2015, pp. 1-6.

ARTICLES IN REVIEW

[1] **Ashutosh Pandey** and DeLiang Wang, "Attentive Training: A New Training Framework for Speech Enhancement", in *IEEE/ACM Transactions on Audio, Speech, and Language Processing*.

[2] Hao Zhang, **Ashutosh Pandey**, and DeLiang Wang, "Low-Latency Active Noise Control Using Attentive Recurrent Network", in *IEEE/ACM Transactions on Audio, Speech, and Language Processing*.

[3] Eric William Healy, Eric M. Johnson, **Ashutosh Pandey**, and DeLiang Wang, "Progress Made in the Efficacy and Viability of Deep Learning Based Noise Reduction", in *The Journal of the Acoustical Society of America*.

SKILLS&TOOLS Python, C++, TensorFlow, PyTorch, Keras, MATLAB

AWARDS

- ***Presidential Fellowship*** 2021
  The Ohio State University
- ***Graduate Research Award*** *in Computer Science and Engineering* 2022
  The Ohio State University

SERVICES

Reviewer:

- *IEEE/ACM Transactions on Audio, Speech, and Language Processing*
- *AAAI Conference on Artificial Intelligence*