

# Masood Delfarah

Ph.D. Candidate

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EDUCATION	<b>Department of Computer Science and Eng., The Ohio State University</b>	
	<b>Ph.D. candidate in Computer Engineering</b>	Fall 2013 – Present
	Perception and Neurodynamics Laboratory (PNL)	
	Supervisor: Professor DeLiang Wang	
	<b>School of Electrical and Computer Engineering, The University of Tehran</b>	
	<b>B.Sc. in Computer Engineering</b>	Fall 2008 – Spring 2013
RESEARCH INTERESTS	<b>Monaural Speech Enhancement</b>	Automatic Speech Recognition
	<b>Speech Dereverberation</b>	Deep Learning
	Microphone Array Speech Processing	Statistical Machine Learning
COMPUTER SKILLS	<b>C/C++, MATLAB, Python</b> , Java, and Unix shell script	
	Machine learning toolboxes: <b>Tensorflow</b> , Caffe, HTK, PyTorch, and MXNet	
	Other skills: Git and LaTeX	
RESEARCH EXPERIENCE	<i>Graduate Research:</i>	
	<ul style="list-style-type: none"><li>• Feature study for two-talker speech separation in reverberant conditions:<ul style="list-style-type: none"><li>– Utilized parallel computation and GPU servers on the Ohio Supercomputing Center for large-scale DNN training for speech separation.</li><li>– Investigated a wide range of acoustic-phonetic features and designed novel feature combinations based on feature selection methods.</li></ul></li><li>• DNN-based two-talker separation algorithm:<ul style="list-style-type: none"><li>– Designed and implemented two-talker separation algorithm.</li><li>– Deployed a development set to optimize the performance of the DNN by studying various architectures and regularization method.</li><li>– Collaborated with The Speech Psychoacoustics Laboratory at The Department of Speech and Hearing Science to perform speech intelligibility tests on human listeners.</li><li>– Perform statistical analysis on the test results and report substantial intelligibility improvement for hearing-impaired listeners.</li></ul></li><li>• Designed and implemented a two-stage DNN to perform joint dereverberation and speech denoising.</li><li>• Investigated two-talker speaker identification in reverberant mixtures.</li><li>• Studied microphone array methods for dereverberation of simulated and recorded reverberant speech signals.</li><li>• Collaborated with lab members to study open-set speaker separation methods:<ul style="list-style-type: none"><li>– Successfully implemented deep clustering, deep attractor network, and permutation invariant training algorithms.</li><li>– Utilized distributed computation over a grid of nodes and GPU servers to perform data parallelism in Tensorflow.</li><li>– Evaluated performance of the algorithms in reverberant conditions.</li></ul></li><li>• Performed pitch-tracking and speech segmentation based on the techniques in Computational Auditory Scene Analysis (CASA) using Java.</li><li>• Evaluated effect of augmenting object detection into visual question answering (VQA) algorithms.</li></ul>	

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- Studied transfer learning in the reinforcement learning framework (ongoing project).

## *Undergraduate research:*

- **(B.Sc. Thesis)** Designed and implemented a decision tree to classify learning styles of toddlers, using the ECLS-K dataset provided by U.S. Department of Education (Supervisor: Dr. Maryam S. Mirian).

## PROFESSIONAL *Reviewer:*

### EXPERIENCE

- IEEE/ACM Transactions on Audio, Speech, and Language Processing
- Speech Communication

## *Graduate Teaching Assistant, The Ohio State University:*

- Modeling and Problem Solving with Spreadsheets and Databases Spring 2017
- Modeling and Problem Solving with Spreadsheets and Databases Spring 2014
- Foundations I: Discrete Structures Fall 2013

## *Undergraduate Teaching Assistant, The University of Tehran:*

- Design and Analysis of Algorithms Spring 2012
- Discrete Mathematics Spring 2012
- Artificial Intelligence Fall 2011

## PUBLICATIONS *Journal papers:*

### AND PRESENTATIONS

- Eric W. Healy, **Masood Delfarah**, Jordan L. Vasko, Brittney L. Carter, and DeLiang Wang, “An algorithm to increase intelligibility for hearing-impaired listeners in the presence of a competing talker” *The Journal of the Acoustical Society of America*, vol. 141, pp. 4230–4239, 2017.
- **Masood Delfarah** and DeLiang Wang, “Features for masking-based monaural speech separation in reverberant conditions” *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, vol. 25, pp. 1085–1094, 2017.
- Maryam S. Mirian, **Masood Delfarah**, and Behzad Moshiri, “Proposing a Unified Knowledge and Experience-based System using Information Fusion Approach to Facilitate the Disaster Management Process” *Disaster Management Knowledge Quarterly* (in Persian), vol. 2, pp. 215–227, 2012.

## *Conference papers:*

- **Masood Delfarah** and DeLiang Wang, “A feature study for masking-based reverberant speech separation” *Proceedings of INTERSPEECH-16*, pp. 555–559, 2016.

## *Selected poster presentations:*

- Eric W. Healy, **Masood Delfarah**, Jordan L. Vasko, and Brittney L. Carter, and DeLiang Wang, “Can a trained deep neural network be implemented into hearing technology?” *Acoustics '17 Boston*, 2017.
- Eric W. Healy, **Masood Delfarah**, Jordan L. Vasko, Brittney L. Carter, and DeLiang Wang, “An algorithm to increase intelligibility for hearing-impaired listeners in the presence of a competing talker” *Acoustics '17 Boston*, 2017.