Masood Delfarah
Ph.D. Candidate

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EDUCATION	**Department of Computer Science and Eng., The Ohio State University**	
	Ph.D. candidate in Computer Engineering	Fall 2013 − Present
	M.Sc. in Computer Engineering	Fall 2013 − Spring 2018
	Perception and Neurodynamics Laboratory (PNL)	
	Supervisor: Professor DeLiang Wang	
	School of Electrical and Computer Engineering, The University of Tehran	
	B.Sc. in Computer Engineering	Fall 2008 − Spring 2013
	GPA: 16.57/20.00 (top 10%).	

RESEARCH INTERESTS	**Monaural Speech Enhancement**	Automatic Speech Recognition
	Speech Dereverberation	Deep Learning
	Microphone Array Speech Processing	Statistical Machine Learning

COMPUTER SKILLS	**C/C++**, **MATLAB**, **Python**, Java, and Unix shell script
	Machine learning toolboxes: **Tensorflow**, Caffe, HTK, PyTorch, and MXNet
	Other skills: Git and LaTeX

RESEARCH EXPERIENCE

Graduate Research:

- Feature study for two-talker speech separation in reverberant conditions:
  - Utilized parallel computation and GPU servers on the Ohio Supercomputing Center for large-scale DNN training for speech separation.
  - Investigated a wide range of acoustic-phonetic features and designed novel feature combinations based on feature selection methods.

- DNN-based two-talker separation algorithm:
  - Designed and implemented two-talker separation algorithm.
  - Deployed a development set to optimize the performance of the DNN by studying various architectures and regularization method.
  - Collaborated with The Speech Psychoacoustics Laboratory at The Department of Speech and Hearing Science to perform speech intelligibility tests on human listeners.
  - Perform statistical analysis on the test results and report substantial intelligibility improvement for hearing-impaired listeners.

- Designed and implemented a two-stage DNN to perform joint dereverberation and speech denoising.

- Investigated two-talker speaker identification in reverberant mixtures

- Studied microphone array methods for dereverberation of simulated and recorded reverberant speech signals.

- Collaborated with lab members to study open-set speaker separation methods:
  - Successfully implemented deep clustering, deep attractor network, and permutation invariant training algorithms

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- – Utilized distributed computation over a grid of nodes and GPU servers to perform data parallelism in Tensorflow.

- – Evaluated performance of the algorithms in reverberant conditions.

- Performed pitch-tracking and speech segmentation based on the techniques in Computational Auditory Scene Analysis (CASA) using Java.

- Evaluated effect of augmenting object detection into visual question answering (VQA) algorithms.

- Studied transfer learning in 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 EXPERIENCE

Reviewer:
- 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 AND PRESENTATIONS

Journal papers:
- 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:

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- **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.