

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 Perception and Neurodynamics Laboratory (PNL) Supervisor: Professor DeLiang Wang	
	School of Electrical and Computer Engineering, University of Tehran B.Sc. in Computer Engineering Fall 2008 – Spring 2013	
RESEARCH INTERESTS	Monaural Speech Enhancement Speech Dereverberation Microphone Array Speech Processing	Automatic Speech Recognition Deep Learning 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	<i>Graduate Research:</i> <ul style="list-style-type: none">• Feature study for two-talker speech separation in reverberant conditions:<ul style="list-style-type: none">– Utilized parallel computation and GPU servers on the Ohio Supercomputing Center to perform large-scale DNN training for speech separation.– Studied a wide range of acoustic-phonetic features and designed novel feature combinations based on feature selection methods.• DNN-based two-talker separation algorithm:<ul style="list-style-type: none">– Designed and implemented a two-talker separation algorithm.– Deployed a development set to optimize the performance of the DNN by studying regularization methods and network architectures.– Collaborated with the Speech Psychoacoustics Laboratory at the Department of Speech and Hearing Science to perform speech intelligibility tests on human listeners.– Performed statistical analysis on the test results and reported 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:<ul style="list-style-type: none">– Successfully implemented deep clustering, deep attractor network, and permutation invariant training algorithms.– Utilized distributed computation over a grid of nodes and GPU servers to perform data parallelism in Tensorflow.– Studied the generalization of the algorithms to reverberant conditions.• Performed pitch-tracking and speech segmentation based on the techniques in Computational Auditory Scene Analysis (CASA) using Java.• Evaluated the effects of augmenting object detection into visual question answering (VQA) algorithms.	

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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 the U.S. Department of Education (Supervisor: Dr. Maryam S. Mirian).
- Proposed a knowledge-based approach for the disaster management process

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, University of Tehran:

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

PUBLICATIONS AND PRESEN- TATIONS

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:

- **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.