

Mahsa Yarmohammadi

RESEARCH INTERESTS Natural Language and Speech Processing, Syntactic Parsing, Information Retrieval, Machine Translation, Machine Learning, Question Answering.

CURRENT POSITION **Postdoctoral Fellow** 12/2017-present
Johns Hopkins University, Baltimore, MD
Center for Language and Speech Processing

EDUCATION **Ph.D. in Computer Science & Engineering** 09/2009-09/2016
Oregon Health & Science University
Department of Computer Science and Electrical Engineering
Center for Spoken Language Understanding

Thesis: *Incremental Segmentation and Annotation Strategies for Real-time Natural Language Processing Applications*
Advisor: Dr. Brian Roark

M.Sc. in Computer (Software) Engineering 09/2004-09/2007
Shahid Beheshti University
Department of Computer Engineering

Thesis: *Extracting the Final Answer from Retrieved Documents in a QA System*
Advisor: Dr. Mehrnoush Shamsfard

B.Sc. in Computer (Software) Engineering 09/1999-09/2004
Amirkabir University of Technology (Tehran Polytechnic)
Department of Computer Engineering and Information Technology

Thesis: *Designing and Implementing an Expert Tool for Verifying and Validating the Knowledge Represented in OAV Triples*
Advisor: Dr. Ahmad Abdollahzadeh Barforoush

JOURNAL ARTICLES R. Sproat, **M. Yarmohammadi**, I. Shafran and B. Roark, "Applications of Lexicographic Semirings to Problems in Speech and Language Processing," *Computational Linguistics*, 2014.

M. Shamsfard and **M. Yarmohammadi**, "A Semantic Approach to Extract the Final Answer in SBUQA Question Answering system," *International Journal of Digital Content Technology and its Applications*, 2010.

A. Hesabi, M. Assi, M. Shamsfard and **M. Yarmohammadi**, "Designing and Developing a Word net for Persian Nouns," *International Journal of Information & Communication Technology*, Iran Telecom Research Center, 2009.

CONFERENCE PAPERS **M. Yarmohammadi**, X. Ma, S. Hisamoto, Y. Wang, H. Xu, D. Povey, P. Koehn and K. Duh. "Robust Document Representations for Cross-Lingual Information Retrieval in Low-Resource Settings."

To appear in *Proceedings of the 17th Machine Translation Summit*, Dublin, Ireland, 2019.

D. Povey, G. Cheng, Y. Wang, K. Li, H. Xu, **M. Yarmohammadi** and S. Khudanpur. “Semi-Orthogonal Low-Rank Matrix Factorization for Deep Neural Networks.” *Conference of the International Speech Communication Association (Interspeech)*, Hyderabad, India, 2018.

M. Yarmohammadi, A. Dunlop and B. Roark. “Transforming trees into hedges and parsing with “hedgebank” grammars.” In *Proceedings of the 52nd Annual Meeting of the Association for Computational Linguistics (ACL)*, Baltimore, USA, 2014.

M. Yarmohammadi, V. K. R. Sridhar, S. Bangalore and B. Sankaran. “Incremental Segmentation and Decoding Strategies for Simultaneous Translation.” In *Proceedings of the 6th International Joint Conference on Natural Language Processing (IJCNLP)*, Nagoya, Japan, 2013.

L. Barbosa, V. K. R. Sridhar, **M. Yarmohammadi** and S. Bangalore. “Harvesting Parallel Text in Multiple Languages with Limited Supervision.” In *Proceedings of the 24th International Conference on Computational Linguistics (COLING)*, Mumbai, India, 2012.

I. Shafran, R. Sproat, **M. Yarmohammadi** and B. Roark. “Efficient Determinization of Tagged Word Lattices using Categorical and Lexicographic Semirings.” In *Proceedings of IEEE Workshop on Automatic Speech Recognition & Understanding (ASRU)*, Hawaii, USA, 2011.

M. Rouhizadeh, **M. Yarmohammadi** and M. Shamsfard. “Developing the Persian WordNet of Verbs; Issues of Compound Verbs and the Editor.” In *Proceedings of the 5th Global WordNet Conference (GWC)*, Mumbai, India, 2010.

M. Yarmohammadi, M. Shamsfard, Mahshid Yarmohammadi, M. Rouhizadeh. “SBUQA Question Answering System”, *Advances in Computer Science and Engineering*, Volume 6, 2009.

M. Yarmohammadi, M. Shamsfard, M. Rouhizadeh and Mahshid Yarmohammadi, “Using WordNet in Extracting the Final Answer from Retrieved Documents in a Question Answering System.” In *Proceedings of 4th Global WordNet conference (GWC)*, Szeged, Hungary, 2008.

M. Rouhizadeh, M. Shamsfard, **M. Yarmohammadi**. “Building a WordNet for Persian Verbs.” In *Proceedings of the 4th Global WordNet conference (GWC)*, Szeged, Hungary, 2008.

M. Rouhizadeh, M. Assi, **M. Yarmohammadi**. “Designing Persian Verbs WordNet.” In *Proceedings of the 2007 Iranian Conference on Linguistics*, Tehran, Iran, 2007.

C. Dadkhah, A. A. Barforoush and **M. Yarmohammadi**. “Design a Tool for Construction of Unique Knowledge Base for Expert Systems.” In *Proceedings of the 18th International Conference on Systems Engineering (ICSENG)*, Las Vegas, USA, 2005.

OTHER PAPERS

M. Yarmohammadi. “Incremental Hedge Parsing and Segmentation and its Evaluation on Simultaneous Machine Translation.” The 4th Pacific Northwest Regional NLP Workshop (NW-NLP), Seattle, USA, 2016.

M. Yarmohammadi. “Discriminative Training with Perceptron Algorithm for POS tagging task.” Technical Report #CSLU-2014-001, Center for Spoken Language Understanding, Oregon Health & Science University, USA, 2014.

M. Yarmohammadi. “Approximate parsing with “hedge grammars”.” The 3rd Pacific Northwest Regional NLP Workshop (NW-NLP), Redmond, USA, 2014.

M. Yarmohammadi, B. Roark, I. Shafran and R. Sproat. "A Summary and Comparison of Two Approaches for Determinization of Lattices." The 2nd Pacific Northwest Regional NLP Workshop (NW-NLP), Redmond, USA, 2012.

M. Yarmohammadi. "Semi-supervised Discriminative N-gram Language Modeling in ASR." CSLU Qualifying Exam Written Paper, Oregon Health & Science University, USA, 2011.

RESEARCH
EXPERIENCE

JHU - Center for Language and Speech Processing 12/2017-present

Postdoctoral Fellow

Machine Translation for English Retrieval of Information in Any Language (MATERIAL):

Research and development on the core components, particularly ASR and IR

Applications of Neural Variational Encoders for Multi-task Learning

OHSU - Center for Spoken Language Understanding 09/2009-05/2016

Graduate Research Assistant

Optimal (syntax-aware) segmentation for high-accuracy/low-latency incremental processing.

Incremental speech-to-speech translation (in collaboration with AT&T Labs-Research).

Applications of lexicographic semirings in speech and NLP.

Discriminative training of the language model for ASR.

Implementing NLP tools: perceptron tagger, Viterbi decoding, tree transformer, shift-reduce parser, modules for OpenGrm library.

AT&T Labs, Inc. - Research - Speech and NLP group 07/2012-09/2012

Summer Intern

Real-time incremental speech-to-speech translation.

Harvesting parallel text in multiple languages for machine translation.

Shahid Beheshti University - Natural Language Processing Lab 01/2006-12/2009

Graduate Research Assistant

SBUQA question answering system.

Designing and building the database and interface of Persian WordNet (FarsNet 1)

Amirkabir University of Technology - Intelligent System Laboratory 09/2002-09/2004

Undergraduate Research Assistant

Implementing knowledge representation transform tools for expert systems.

WORK
EXPERIENCE

Intel Corporation 08/2015-12/2017

Hillsboro, OR, USA

Software Architect

WFST and neural net decoding accelerators for NLP applications.

GAM Electronics Company 08/2004-12/2008

Tehran, Iran

Java/J2EE developer

Large-scale enterprise office automation applications.

Tools: J2EE, Oracle 10g, Socket Programming.

PROFESSIONAL
ACTIVITIES

Reviewing and Program Committee

ACL Conference 2019, Primary Reviewer.

NAACL-HLT Conference 2019, Primary Reviewer.
Interspeech Conference 2019, Scientific Review Committee.
ICASSP Conference 2019, Scientific Review Committee.
Interspeech Conference 2018, Scientific Review Committee.
ICASSP Conference 2018, Scientific Review Committee.
Interspeech Conference 2017, Scientific Review Committee.
Intel Spoken Language Technologies Summit 2017, Program Committee.
ICASSP Conference 2017, Scientific Review Committee.
Co-chair of the 4th Pacific Northwest Regional NLP Workshop: NW-NLP 2016.
NW-NLP Workshop 2016, Program Committee.
Interspeech Conference 2016, Scientific Review Committee.
NAACL-HLT Conference 2015, Primary Reviewer.
NW-NLP Workshop 2014, Scientific Review Committee.
NAACL-HLT Conference 2013, Primary Reviewer.

Organizing Committee

Interspeech Conference, 2012.
ACL-HLT Conference, 2011.