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Forough Arabshahi

Positions

Sept 2020 - Present **Research Scientist, Facebook, Inc.**, Menlo Park, CA.

July 2018 - Sept 2020 **Post-Doctoral Associate, Machine Learning Department, School of Computer Science (SCS)**, *Carnegie Mellon University (CMU)*, Pittsburgh, PA.

Advisor: Prof. Tom Mitchell

Research: Commonsense and Automated Reasoning, Neuro-symbolic Learning, Deep Learning, Probabilistic Learning, Spectral Methods, Learning by Instruction, Natural Language Processing

Education

Spring 2018 **PhD in Electrical Engineering and Computer Science**, *University of California Irvine (UCI)*, Irvine, CA.

Thesis: *Learning Latent Hierarchical Structures via Probabilistic Models and Deep Learning*

Advisor: Prof. Animashree Anandkumar

Co-Advisor: Prof. Sameer Singh

Fall 2012 **M.Sc in Electrical Engineering, Communication Systems, School of Electrical Engineering**, *Amirkabir University of Technology*, Tehran, Iran, .

Thesis: *Microwave Imaging of the Breast Tissue for Breast Cancer Detection*

Advisor: Prof. Hamid Sheikhzadeh-Nadjar

Summer 2010 **B.Sc in Electrical Engineering, Communications, School of Electrical and Computer Engineering**, *Shiraz University*, Shiraz, Iran.

Thesis: *A MAC Layer Protocol for Underwater Wireless Acoustic Sensor Networks*

Advisor: Prof. Alireza Keshavarz-Haddad

Peer-Reviewed Publications

Conferences

- **F. Arabshahi,** J. Lee, M. Gawarecki , K. Rivard, A. Azaria, T. Mitchell, *"Conversational Neuro-Symbolic Commonsense Reasoning"*, Appearing in the 35^{th} AAAI Conference on Artificial Intelligence, 2021.
- Z. Lu*, **F. Arabshahi***, I. Labutov, T. Mitchell, *"Look-up and Adapt: A One-shot Semantic Parser:"*, *2019 Conference on Empirical Methods in Natural Language Processing (EMNLP)*, * Equal Contribution.
- **F. Arabshahi,** S. Singh, A. Anandkumar, *"Combining Symbolic Expressions and Black-box Function Evaluations in Neural Programs"*, *Proceedings of the International Conference on Learning Representations (ICLR), 2018. Also appeared in NeurIPS 2017 highlights, Learn How to Code a Paper with State of the Art Frameworks, NeurIPS 2017 MLtrain workshop.*
- **F. Arabshahi,** A. Anandkumar, *"Spectral Methods for Correlated Topic Models"*, *Proceedings of the International Conference on Artificial Intelligence and Statistics (AISTATS), 2017*, PMLR 54:1439-1447.
- **F. Arabshahi,** F. Huang, A. Anandkumar, C. T. Butts, S. M. Fitzhugh, *"Are you going to the party: depends, who else is coming? [Learning hidden group dynamics via conditional latent tree models]"*, *Data Mining (ICDM), 2015 IEEE International Conference on, Atlantic City, NJ, 2015*.

- **F. Arabshahi,** S. Monajemi, H. Sheikhzadeh, K. Raahemifar, R. Faraji-Dana, *"A Frequency Domain MVDR Beamformer for UWB Microwave Breast Cancer Imaging in Dispersive Mediums"*, *13th IEEE International Symposium on Signal Processing and Information Technology (ISSPIT) 2013*.

Workshops

- **F. Arabshahi,** S. Singh, A. Anandkumar, *"Towards Solving Differential Equations through Neural Programming"*, *ICML workshop Neural Abstract Machines & Program Induction v2 (NAMPI), Stockholm, Sweden, 2018*.
- **F. Arabshahi,** R. Weiss, A. Anandkumar, *"Beyond LDA: Spectral Methods for Topic Modeling Based on Exchangeable Partitions"*, *NeurIPS workshop on Bayesian Nonparametrics: The Next Generation, 2015.*
- **F. Arabshahi,** F. Huang, A. Anandkumar, C. Butts, *"Modeling and Predicting Dynamic Social Interactions Using Conditional Latent Random Fields"*, *Statistical Inference for Network Models, NetSci Satellite Symposium 2014*.

Preprints

- **F. Arabshahi***, Z. Lu*, S. Singh, A. Anandkumar, *"Tree Stack Memory Units"*, arXiv preprint arXiv:1911.01545, 2020, * Equal Contribution.
- **F. Arabshahi,** K. Rivard, T. Li, B. Myers, T. Mitchell, *"Conversational Learning"*, *Preprint (2020).*

Honors

Fall 2019 **Rising Stars in EECS 2019**, *Selected to participate in Rising Stars 2019, an academic career workshop for women in EECS hosted by the University of Illinois at Urbana-Champaign.*

Spring 2017 **Phi Betta Kappa Alumni International Scholarship**, *Recipient of $2000.*

Fall 2015 **GHC scholarship**, *Grace Hopper Celebration of Women in Computing.*

Summer 2015 **UCI data science initiative summer fellowship**, *University of California Irvine*, $6,039 stipend, Acceptance rate: 15/115.

Travel Grants:, ICLR 2018 travel award ($500), ICDM 2015 student award ($550), Bren School of ICS Grace Hopper grant 2014, Machine Learning Summer School student grant, 2014.

Internships

Summer 2017 **Software Engineer Intern**, *Pepperdata Inc.*, *Applying machine learning and data analysis tools to the time-series data available in Pepperdata.*

Summer 2016 **Research Intern**, *Yahoo! Labs*, *Link industries: Advertisement clustering using spectral methods*, Proposed a joint matrix and tensor factorization algorithm for clustering Yahoo's advertisements for recommendation purposes.

Teaching Experience

Spring 2018 **"Spectral Methods: Latent Variable Models"**, *Invited lecture in Probabilistic Graphical Models*, Department of Machine Learning, Carnegie Mellon University.

Fall 2013 **Computational methods in EECS (EECS 10)**, *Teaching Assistant*, Department of Electrical Engineering and Computer Science, University of California Irvine.

Spring 2010 **Communications I**, *Teaching Assistant*, School of Electrical and Computer Engineering, Shiraz University.

Student Advising

Summer 20-present **Pranay Mundra**, *Summer Intern, University of Washington.*

Winter 20-present **Alex Pan**, *Summer Undergraduate Research Fellowships (SURF) Program, Caltech.*

Fall 18-present **Zhichu (Brian) Lu**, *Bachelor's Thesis, continuing Master's Thesis, SCS, CMU.*

Fall 19-present **Nghia (Max) Le**, *Master's Thesis, SCS, CMU.*

Fall 19-present **Jennifer Lee**, *Bachelor's Thesis, SCS, CMU.*

Summer 19 **Mikayla Gawarecki**, *Summer Research Intern, SCS, CMU.*

Spring 19 **Eric Nie**, *Research course 15-400, SCS, CMU.*

Spring, Summer 19 **Bifei Liu**, *Student project course "context-aware coreference resolution" designed by Forough Arabshahi, ECE, CMU.*

Spring 19 **Sourabh Girish Karandikar**, *Student project course "context-aware coreference resolution" designed by Forough Arabshahi, ECE, CMU.*

References

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