

# Forough Arabshahi

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## Position

July 2018 - Present **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

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## 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

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## Peer-Reviewed Publications

- Conferences ○ 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*.

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## Preprints

- **F. Arabshahi**, M. Gawarecki, K. Rivard, A. Azaria, T. Mitchell, “CORGI: Commonsense Reasoning by Instruction”, *Preprint (2020)*.
- **F. Arabshahi**, K. Rivard, T. Li, B. Myers, T. Mitchell, “Conversational Learning”, *Preprint (2020)*.
- **F. Arabshahi\***, Z. Lu\*, S. Singh, A. Anandkumar, “Memory-Augmented Recursive Neural Networks”, arXiv preprint arXiv:1911.01545, 2019 (Under Review ICML 2020), \* Equal Contribution.

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## 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 Beta 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.

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## 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.

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## 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.

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## Student Advising

- 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.*

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## References

### **Tom Mitchell**

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### **Animashree Anandkumar**

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### **Carter T. Butts**

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