ABOLFAZL HASHEMI

LINKS:

- Address: 1 University Station C0803, Austin, TX 78712-0240
- Email: abolfazl@utexas.edu
- Google Scholar: https://scholar.google.com/citations?user=Se7mocgAAAAJ&hl=en
- GitHub: https://github.com/realabolfazl
- Homepage: https://abolfazlh.github.io
- LinkedIn: https://www.linkedin.com/in/abolfazlh
- ResearchGate: https://www.researchgate.net/profile/Abolfazl_Hashemi2

EDUCATION

Doctor of Philosophy (Ph.D.), Electrical Engineering — June 2016–August 2020 (expected)
University of Texas at Austin, Austin, Texas, USA
Adviser: Prof. Haris Vikalo, GPA: 4.0/4.0

Master of Science in Engineering (M.S.E.), Electrical Engineering — August 2014–May 2016
University of Texas at Austin, Austin, Texas, USA
Adviser: Prof. Haris Vikalo, GPA: 3.88/4.0

Bachelor of Science (B.S.), Electrical Engineering — September 2010–July 2014
Sharif University of Technology, Tehran, Iran
Adviser: Prof. Babak H. Khalaj, GPA: 3.90/4.0

RESEARCH INTERESTS

- Signal and information processing
- Control of resource-constrained systems
- Machine learning and data science
- Bioinformatics

EXPERIENCES

University of Texas at Austin — August 2014-present

- Graduate Research Assistant: *Collaborative Sensing and Learning of Structured Data*
- Graduate Teaching Assistant, Digital Signal Processing (Fall 2014 and Spring 2015), Estimation Theory (Fall 2017), Statistical Machine Learning (Fall 2019)

Cognitive Scale, Austin, Texas — Summer 2017

- Data Scientist Intern: *Relation Extraction for clinical text data using Deep Neural Network.*

Hong Kong University of Science and Technology — Summer 2013

- Undergraduate Research Intern: *Performance analysis of robust estimators of Covariance matrices, Designed and developed simulations in MATLAB.*

Sharif University of Technology — September 2012-July 2014

- Undergraduate Research Assistant: *Developed a novel camera vision based Gait Analysis method exploiting human body-parts proportion.*

- Undergraduate Teaching Assistant: *Voluntarily teaching assistant positions for several courses in Electrical Engineering to help other students in their study to be prosperous throughout their education.*

SCHOLASTIC HONORS

- ICML Travel Award, June 2019
- One of five finalists for the best student paper award, American Control Conference, June 2018
- American Control Conference Travel Award, June 2018
- NSF Travel Award, August 2017
- One of four invited student speakers at 12th CSL student conference at UIUC, selected from more than 100 abstract submissions, February 2017
  (Link: https://publish.illinois.edu/studentconference2017/speakers/invited-students/)
- Professional Development Award, Office of Graduate Studies at UT Austin, December 2016, July 2019
- IEEE Signal Processing Society Travel Award, September 2016
- Inclusive Classrooms Leadership Certificate, UT Austin, February 2015
- Professional Teaching Assistant Certificate, UT Austin, August 2014
- Qualied as an Exceptional Talent eligible to enter Graduate Studies without entrance exam, Sharif University of Technology, December 2013
- Ranked 79th among more than 277,000 participants in the Nationwide University Entrance Exam for B.Sc. degree, 2010.
- Recipient of Iranian National Elite Foundation fellowship, 2010-2014

PUBLICATIONS

In Preparation:

1. Ghasemi, M., Hashemi, A., Vikalo, H., Topcu, U., "Identifying Low-Dimensional Structures in Markov Chains: A Nonnegative Matrix Factorization Approach," *Submitted*, 2019.
   Link: https://arxiv.org/abs/1909.12898
2. Hashemi, A, Vikalo, H., de Veciana, G., "Stochastic-Greedy++: Closing the Optimality Gap in Exact Weak Submodular Maximization," *Submitted*, 2019.
   Link: https://arxiv.org/abs/1907.09064
3. Hashemi, A., Ghasemi, M., Vikalo, H., Topcu, U., "Randomized greedy sensor selection: Leveraging weak submodularity," *Submitted*, 2019.
   Link: https://arxiv.org/abs/1807.08627
4. Hashemi, A., Shafipour, R., Vikalo, H., Mateos, G., "Accelerated Sampling of Bandlimited Graph Signals," *Submitted*, 2019.
   Link: https://arxiv.org/abs/1807.07222

Journal Papers:

1. Hashemi, A. and Vikalo, H., "Evolutionary Self-Expressive Models for Subspace Clustering," *IEEE Journal of Selected Topics in Signal Processing,* vol. 12, no. 6, pp. 1534–1546, Dec. 2018.
   Link: https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=8502063
2. Hashemi, A. and Vikalo, H., "Accelerated Orthogonal Least-Squares for Large-Scale Sparse Reconstruction," *Digital Signal Processing,* vol. 82, pp. 91–105, Nov. 2018.
   Link: https://www.sciencedirect.com/science/article/pii/S1051200418305311

3. Hashemi, A., Zhu, B., Vikalo, H., "Sparse Tensor Decomposition for Haplotype Assembly of Diploids and Polyploids," *BMC Genomics,* vol. 19, no. 4, pp. 1–15, Mar. 2018.
Link: https://bmcgenomics.biomedcentral.com/articles/10.1186/s12864-018-4551-y

Conference Papers:

1. Ghasemi, M., Hashemi, A., Vikalo, H., Topcu, U., "On Submodularity of Quadratic Observation Selection in Constrained Networked Sensing Systems," *American Control Conference (ACC),* Philadelphia, PA, July 2019.
Link: https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=8814899

2. Shafipour, R., Hashemi, A., Mateos, G., Vikalo, H., "Online topology inference from streaming stationary graph signals," *IEEE Data Science Workshop (DSW)*, Minneapolis, MN, June 2019.
Link: https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8755560

3. Hashemi, A., Ghasemi, M., Vikalo, H., Topcu, U., "Submodular Observation Selection and Information Gathering for Quadratic Models," *International Conference on Machine Learning (ICML)*, Long Beach, CA, June 2019.
Link: http://proceedings.mlr.press/v97/hashemi19a/hashemi19a.pdf

4. Hashemi, A. and Vikalo, H., "Evolutionary Subspace Clustering: Discovering Structure In Self-expressive Time-series Data," *International Conference on Acoustic, Speech and Signal Processing (ICASSP),* UK, May 2019.
Link: https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=8682405

5. Consul, S., Hashemi, A., Vikalo, H., "A MAP Framework for Support Recovery of Sparse Signals Using Orthogonal Least Squares," *International Conference on Acoustic, Speech and Signal Processing (ICASSP),* Brighton, UK, May 2019.
Link: https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=8683151

6. Hashemi, A., Kilic, O.F., Vikalo, H., "Near-Optimal Distributed Estimation for a Network of Sensing Units Operating Under Communication Constraints," *Conference on Decision and Control (CDC),* Miami, FL, Dec. 2018.
Link: https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=8618717

7. Hashemi, A., Shafipour, R., Vikalo, H., Mateos, G., "A Novel Scheme for Support Identification and Iterative Sampling of Bandlimited Graph Signals," *Global Conference on Signal and Information Processing (GlobalSIP),* Anaheim, CA, Nov. 2018.
Link: https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8646488

8. Hashemi, A., Ghasemi, M., Vikalo, H., Topcu, U., "A Randomized Greedy Algorithm for Near-Optimal Sensor Scheduling in Large-Scale Sensor Networks," *American Control Conference (ACC),* Milwaukee, WI, Jun. 2018.
Link: https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=8431563

9. Hashemi, A., Shafipour, R., Vikalo, H., Mateos, G., "Sampling and Reconstruction of Graph Signals via Weak Submodularity and Semidefinite Relaxation," *International Conference on Acoustic, Speech and Signal Processing (ICASSP),* Calgary, Alberta, Canada, Apr. 2018.
Link: https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=8461925

10. Hashemi, A. and Vikalo, H., "Sparse Recovery via Branch and Bound Least-Squares," *International Conference on Acoustic, Speech and Signal Processing (ICASSP),* New Orleans, LA, Mar. 2017.
Link: https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=7953060

11. Hashemi, A. and Vikalo, H., "Sparse Linear Regression via Generalized Orthogonal Least-Squares," *Global Conference on Signal and Information Processing (GlobalSIP),* Washington, DC, Dec. 2016.
Link: https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7906052

Workshops with no Proceedings:

1. Hashemi, A., Zhu, B., Vikalo, H., "Sparse Tensor Decomposition for Haplotype Assembly of Diploids and Polyploids," *The 4th International Workshop on Computational Network Biology: Modeling, Analysis, Control (CNB-MAC),* Boston, MA, Aug. 2017.
2. Hashemi, A., Zhu, B., Vikalo, H., "A Tensor Factorization Framework for Haplotype Assembly of Diploids and Polyploids," *RECOMB Satellite Workshop on Massively Parallel Sequencing,* Hong Kong, May 2017.

UNDERGRADUATE AND GRADUATE MENTORSHIP

- Ahmed Al Kurdestani (B.S.): First-order optimization methods for large-scale matrix completion
- Sara Abdi (B.S.): Efficient matrix and tensor completion models for study of sequencing data
- Banghua Zhu (B.S.): Sparse tensor decomposition for haplotype assembly
- Hussain Almattar (B.S.): Distributed vs. federated learning: Exploring the trade-offs in collaborative learning schemes
- Yiuye Chen (MSE): Distributed consensus and convex optimization over resource constrained networks

PRESENTATIONS

1. Tutorial on Submodular maximization, *The Oden Institute for Computational Engineering and Sciences at UT Austin*, Austin, TX, Nov. 2019.
2. Tutorial on Submodular minimization, *The Oden Institute for Computational Engineering and Sciences at UT Austin*, Austin, TX, Oct. 2019.
3. Submodular Observation Selection and Information Gathering for Quadratic Models, *International Conference on Machine Learning (ICML)*, Long Beach, CA, June 2019.
4. Near-Optimal Distributed Estimation for a Network of Sensing Units Operating Under Communication Constraints," *Conference on Decision and Control (CDC),* Miami, FL, Dec. 2018.
5. A Randomized Greedy Algorithm for Near-Optimal Sensor Scheduling in Large-Scale Sensor Networks, *American Control Conference (ACC),* Milwaukee, WI, Jun. 2018.
6. Sparse Tensor Decomposition for Haplotype Assembly of Diploids and Polyploids, *12th CSL student conference at UIUC*, Urbana-Champaign, Illinois, Feb. 2017.
7. Sparse Linear Regression via Generalized Orthogonal Least-Squares, *Global Conference on Signal and Information Processing (GlobalSIP),* Washington, DC, Dec. 2016.

PROFESSIONAL MEMBERSHIPS AND SERVICES

Memberships:

- Institute of Electrical and Electronics Engineers (IEEE) 2016-present
- Member of Society for Industrial and Applied Mathematics (SIAM) 2016-present

Technical program committees:

- The 14th International Multi-Conference on Computing in the Global Information Technology (ICCGI), Rome, Italy, 2019.
- The 11th International Conference on Mobile, Hybrid, and Online Learning (eLmL), Athens, Greece, 2019.
- The 12th International Conference on Advanced Engineering Computing and Applications in Sciences (ADVCOMP), Athens, Greece, 2018.

- The 13th International Multi-Conference on Computing in the Global Information Technology (ICCGI), Venice, Italy, 2018.

Journal Reviews:

- IEEE Transactions on Signal Processing (15 articles)
- IEEE Signal Processing Letters
- IEEE Transactions on Signal and Information Processing over Networks
- Elsevier Signal Processing
- IET Signal Processing
- Nature Scientific Reports
- PLOS One
- Taylor and Francis Journal on Forensic Sciences Research

Conference Reviews:

- ICML 2020, ACC 2020, CDC 2018, eLmL 2019, ADVCOMP 2019, ICCGI 2018, ICCGI 2019

COMPUTER SKILLS

- Proficient in Python, MATLAB, C++ (past experience)
- Experienced in R, TensorFlow/Theano/Keras, Pyspark, Shell Scripting

REFERENCES

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  University of Texas at Austin
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  University of Texas at Austin
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- Ufuk Topcu
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  Email: `utopcu@utexas.edu`
- Alex Dimakis
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