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Haris Vikalo

Education

2003 **Ph.D. in Electrical Engineering**, *Stanford University*, Stanford, CA.
1997 **M.Sc. in Electrical Engineering**, *Lehigh University*, Bethlehem, PA.
1995 **B.Sc. in Electrical Engineering**, *University of Zagreb*, Zagreb, Croatia.

Experience

Current and Previous Academic Positions

2019 - **Professor**, *ECE Department, University of Texas at Austin*, Austin.
2013 - 2019 **Associate Professor**, *ECE Department, University of Texas at Austin*, Austin.
2007 - 2013 **Assistant Professor**, *ECE Department, University of Texas at Austin*, Austin.
2003 - 2007 **Associate Scientist**, *EE Department, California Institute of Technology*, Pasadena.

Other Professional Experience

2014 - 2014 **Visiting Professor**, *Max F. Perutz Laboratories*, Vienna, Austria.
Summer 1999 **Member of Technical Staff**, *Bell Labs*, Murray Hill, NJ.

Teaching in the Last Five Years

2021, 2020 *Statistical Machine Learning* (graduate)
2018 *Genomic Signal Processing and Data Science* (graduate)
2017 *Estimation Theory* (graduate)
2017-2021 *Digital Signal Processing* (undergraduate)

Community Activities and Professional Service

2021 Senior Program Committee Member, the 35th AAAI Conference on Artificial Intelligence
2021 NSF Panelist, CCF Program
2019 Technical Program Committee Member, 6th International Workshop on Computational Network Biology (CNB-MAC), Niagara Falls, NY
2018 - now Associate Editor, IEEE Trans. on Molecular, Biol. and Multi-Scale Communications
2018 Technical Program Committee Member, 5th International Workshop on Computational Network Biology (CNB-MAC), Washington, DC

2018 Technical Program Committee Member, IEEE International Symposium on Information Theory, Vail, CO

2017 Technical Program Committee Member, the 4th International Workshop on Computational Network Biology (CNB-MAC), Boston, MA

2017 Session Chair (Genome Assembly and DNA Storage Systems), 2017 Information Theory and Applications Workshop, San Diego, CA

2017 NSF Panelist, CCF Program

2015 Technical Program Chair, Symposium on Signal Processing and Mathematical Modeling of Biological Processes with Applications to Cyber-Physical Systems for Precise Medicine, IEEE Global Conference on Signal and Information Processing, Orlando, FL

2015 Technical Program Committee Member, the 2nd International Workshop on Computational Network Biology (CNB-MAC), Atlanta, GA

2014 NSF Panelist, CCF Program

2014 Technical Program Committee Member, the 8th International Symposium on Turbo Codes and Iterative Information Processing (ISTC), Bremen, Germany

2014 Technical Program Committee Member, the 1st International Workshop on Computational Network Biology (CNB-MAC), Newport Beach, CA

2013 General Chair, Symposium on Bioinformatics and Systems Biology, IEEE Global Conference on Signal and Information Processing (GlobalSIP), Austin, TX

2013 Technical Program Chair, the 24th International Conference on Information, Communication, and Automation Technologies, Sarajevo, Bosnia and Herzegovina

2013 Student Paper Award Chair, IEEE Workshop on Genomic Signal Processing and Statistics (GENSIPS), Houston, TX

2011 Technical Program Committee Member, IEEE Workshop on Genomic Signal Processing and Statistics (GENSIPS), San Antonio, TX

2011 Technical Program Chair, the IEEE Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA (Track F: Bio image and signal processing)

2010 Technical Program Chair, IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS), Cold Spring Harbor, NY

2010 Guest Editor, EURASIP Journal on Advances in Signal Processing, Special Issue on Genomic Signal Processing

2009 Tutorial Chair, IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS), Minneapolis, MN

2009 Tutorial Program Committee Member, IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS), Minneapolis, MN

2008 Co-organized and presented a full-day tutorial on Bioinformatics and Computational Biology I, II at the IEEE International Conference on Acoustics, Speech, and Signal Processing, Las Vegas, NV

2007 Technical Program Committee Member, IEEE Workshop on Genomic Signal Processing and Statistics (GENSIPS), Tuusula, Finland

Advising

PhD In Progress

Shorya Consul, Monica Ribero, Yiyue Chen, Pedram Akbarian, Sameer Bibikar, Usman Akram

PhD Supervisions Completed

2021 Ziqi Ke
2020 Abolfazl Hashemi
2018 Soyeon Ahn
2017 Somsubhra Barik
2016 Natalia Arzeno-Gonzalez
2015 Shreepriya Das
2014 Xiaohu Shen
2012 Manohar Shamaiah
2011 Sang-Hyun Lee (co-supervised)

MSc Supervisions Completed

2020 Yiyue Chen, Monica Ribero
2019 Shorya Consul, Ziqi Ke
2016 Abolfazl Hashemi
2012 Shreepriya Das
2011 Ting Wu
2010 Mahsuni Gokdemir, Mijung Park (co-supervised), Xiaohu Shen
2009 Juhun Lee

Selected Invited Talks

2021 Texas A&M, Data Science Institute
"Sensing and Learning in Distributed Systems Operating under Resource Constraints"

2018 University of Southern California, CBIO Colloquium
"Efficient Algorithms for Haplotype Assembly and Viral Quasispecies Reconstruction"

2017 The Chinese University of Hong Kong
"Algorithms for Haplotype Assembly"

2015 USC, 2015 Molecular, Biological and Multi-Scale Communications Workshop
"Algorithms for Haplotype Assembly"

2015 California Institute of Technology, Department of Electrical Engineering
"Algorithms for Haplotype Assembly"

2015 Stanford University, Kailath Lecture and Colloquia
"Algorithms for Haplotype Assembly"

2014 EPFL, School of Computer and Communication Sciences
"Decoding Genetic Variations: Communications-Inspired Haplotype Assembly"

2014 ETHZ, Department of Information Technology and Electrical Engineering
"Decoding Genetic Variations: Communications-Inspired Haplotype Assembly"

2014 TU Munich, Department of Electrical Engineering
"Decoding Genetic Variations: Communications-Inspired Haplotype Assembly"

2014 University of Stuttgart, Department of Electrical Engineering
"Decoding Genetic Variations: Communications-Inspired Haplotype Assembly"

2014 Max F. Perutz Laboratories, Center for Integrative Bioinformatics, Vienna
"Decoding Genetic Variations: Communications-Inspired Haplotype Assembly"

2012 Korea Advanced Institute of Science and Technology, Dept. of Electrical Engineering
"Signal Processing for Next Generation Biosensing and Sequencing"

2012 Samsung Advanced Institute of Technology, South Korea
"Signal Processing for Next Generation Biosensing and Sequencing"

2012 Stanford University, Department of Electrical Engineering
"How to read your genes: Signal Processing for Next Generation Sequencing and Biosensing"

2012 University of California Los Angeles, Department of Electrical Engineering
"Signal Processing for Next Generation Sequencing and Biosensing"

2012 MIT, Department of Electrical Engineering and Computer Science
"How to Read your Genes: Signal Processing for Next Generation Sequencing and Biosensing"

2012 University of Illinois at Urbana-Champaign, Dept. of Electrical and Comp. Engineering
"How to Read your Genes: Signal Processing for Next Generation Sequencing and Biosensing"

2012 California Institute of Technology, Department of Electrical Engineering
"Signal Processing for Next Generation Sequencing and Biosensing"

2012 University of Southern California, Department of Electrical Engineering
"Signal Processing for Next Generation Sequencing and Biosensing"

Patents

2021 A. Hassibi, B. Hassibi, and H. Vikalo, "Methods for detecting analytes," U.S. patent no. 11,001,881

2016 A. Hassibi, B. Hassibi, and H. Vikalo, "Multiplex QPCR Arrays," U.S. patent no. 9,458,497

2015 B. Hassibi, H. Vikalo and A. Hassibi,"Method and apparatus for detection, identification and quantification of single-and multi-analytes in affinity-based sensor arrays," U.S. patent no. 9,223,929

2015 A. Hassibi, B. Hassibi, H. Vikalo and J. L. Riechmann,"Real-time microarrays," U.S. patent no. 9,133,504

Publications

In Review

1. M. Ribero, J. Henderson, S. Williamson and H. Vikalo, "Federating recommendations using differentially private prototypes."
2. Y. Chen, A. Hashemi and H. Vikalo, "Communication-efficient variance-reduced decentralized stochastic optimization over time-varying directed graphs."
3. A. Hashemi, A. Acharya, R. Das, H. Vikalo, S. Sanghavi, I. Dhillon, "On the benefits of multiple gossip steps in communication-constrained decentralized optimization."
4. M. Ribero and H. Vikalo, "Communication-efficient federated learning via optimal client sampling."
5. M. Ribero, H. Vikalo and G. de Veciana, "Federated learning under time-varying communication constraints and intermittent client availability."
6. S. Bibikar, X. Chen, H. Vikalo and A. Wang, "Federated dynamic sparse training: Computing less, communicating less, yet learning better."
7. Z. Ke and H. Vikalo, "Deep learning for reconstruction of disease transmission networks from viral genomic data."

Journal Papers

1. N. M. Arzeno and H. Vikalo, "Evolutionary clustering via message passing," *IEEE Transactions on Knowledge and Data Engineering*, vol. 33, no. 6, June 2021, pp. 2452 - 2466.
2. A. Hashemi, M. Ghasemi, H. Vikalo and U. Topcu, "Randomized greedy sensor selection: Leveraging weak submodularity," *IEEE Trans. on Automatic Control*, vol. 66, no. 1, January 2021, pp. 199-212.
3. A. Sankararaman, H. Vikalo, and F. Baccelli, "ComHapDet: A spatial community detection algorithm for haplotype assembly," *BMC Genomics* vol. 21 (Suppl 9), September 2020, pp. 586:1-14.
4. S. Barik and H. Vikalo, "Matrix completion and performance guarantees for single individual haplotyping," *IEEE Trans. on Signal Processing*, vol. 67, no. 18, September 2019, pp: 4782-4794.
5. A. Hashemi and H. Vikalo, "Evolutionary self-expressive models for subspace clustering," *IEEE Journal of Selected Topics in Signal Processing, Special Issue on Data Science: Robust Subspace Learning and Tracking*, vol. 12, no. 6, December 2018, pp. 1534-1546.

6. S. Barik, S. Das, and H. Vikalo, "Viral quasispecies reconstruction via correlation clustering," *Genomics*, vol. 110, no. 6, November 2018, pp. 375-381.

7. A. Hashemi and H. Vikalo, "Accelerated orthogonal least-squares for large-scale sparse reconstruction," *Digital Signal Processing*, vol. 82, no. 11, November 2018, pp. 91-105.

8. S. Ahn, Z. Ke and H. Vikalo, "Viral quasispecies reconstruction via tensor factorization with successive removal," *Bioinformatics*, vol. 34, no. 13, July 2018, pp. i23–i31.

9. A. Hassibi, A. Manickam, R. Singh, S. Bolouki, R. Sinha, K. Jirage, M. McDermott, B. Hassibi, H. Vikalo, G. Mazarei, L. Pei, L. Bousse, M. Miller, M. Heshami, M. Savage, M. Taylor, N. Gamini, N. Wood, P. Mantina, P. Grogan, P. Kuimelis, P. Savalia, S. Conradson, Y. Li, R. Meyer, E. Ku, J. Ebert, B. Pinsky, G. Dolganov, T. Van, K. Johnson, P. Naraghi-Arani, R. Kuimelis, G. Schoolnik, "Multiplexed identification, quantification and genotyping of infectious agents using a semiconductor biochip," *Nature Biotechnology*, 36, 2018, pp. 738–745.

10. S. Ahn and H. Vikalo, "aBayesQR: A Bayesian method for reconstruction of viral populations characterized by low diversity," *J. of Computational Biology*, vol. 25, no. 7, July 2018, pp: 637–648.

11. H. Yang, J. Chun, and H. Vikalo, "Cyclic block coordinate minimization algorithms for DOA estimation in co-prime arrays," *Signal Processing*, vol. 145, no. 4, April 2018, pp. 272–284.

12. A. Hashemi, B. Zhu and H. Vikalo, "Sparse tensor decomposition for haplotype assembly of diploids and polyploids," *BMC Genomics*, 19(Suppl 4):191, March 2018.

13. H. Si, H. Vikalo, and S. Vishwanath, "Information-theoretic analysis of haplotype assembly," *IEEE Transactions on Information Theory*, vol. 63, no. 7, July 2017, pp: 3468-3479.

14. S. Das and H. Vikalo, "Optimal haplotype assembly via a branch-and-bound algorithm," *IEEE Trans. on Molecular, Biological, and Multi-Scale Comm.*, vol. 3, no. 1, March 2017, pp: 1-12.

15. E. O'Reilly, F. Baccelli, G. de Veciana, and H. Vikalo, "End-to-end optimization of high-throughput DNA sequencing" *Journal of Computational Biology*, 23(10): 789-800, October 2016.

16. C. Cai, S. Sanghavi, and H. Vikalo, "Structured low-rank matrix factorization for haplotype assembly," *IEEE Journal of Selected Topics in Signal Processing, Special Issue on Structured Matrices in Signal and Data Processing*, vol. 10, no. 4, August 2016, pp: 647-657.

17. Z. Puljiz and H. Vikalo, "Decoding genetic variations: Communications-inspired haplotype assembly," *IEEE/ACM Trans. on Comput. Biology and Bioinformatics*, vol. 13, no. 3, June 2016, pp: 518-530.

18. N. M. Arzeno and H. Vikalo, "A novel mortality risk prediction score based on nonlinear feature transformations," *Journal of Biomedical Informatics*, vol. 56, August 2015, pp: 145-156.

19. S. Ahn and H. Vikalo, "Joint haplotype assembly and genotype calling via sequential Monte Carlo algorithm," *BMC Bioinformatics*, 16:223, July 2015, doi:10.1186/s12859-015-0651-8.

20. S. Das and H. Vikalo, "SDhaP: Haplotype assembly for diploids and polyploids via semi-definite

programming," *BMC Genomics*, 16:260, April 2015, doi:10.1186/s12864-015-1408-5.

21. N. M. Arzeno and H. Vikalo, "Semi-supervised affinity propagation with soft instance-level constraints," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 37, no. 5, May 2015, pp: 1041-1052.

22. X. Shen, M. Shamaiah, and H. Vikalo, "Iterative learning of a DNA consensus sequence from high-throughput short reads: Algorithms and limits of performance," *IEEE Transactions on Signal Processing*, vol. 62, no. 17, September 2014, pp: 4425-4435.

23. S. Barik and H. Vikalo, "Sparsity-aware sphere decoding: Algorithms and complexity analysis," *IEEE Transactions on Signal Processing*, vol. 62, no. 9, May 2014, pp: 2212-2225.

24. M. Park, M. Nassar, and H. Vikalo, "Bayesian active learning for drug combinations," *IEEE Transactions on Biomedical Engineering*, 60(11), November 2013, pp: 3248-3255.

25. S. Das and H. Vikalo, "Base calling for high-throughput short-read sequencing: Dynamic programming solutions," *BMC Bioinformatics*, 2013, 14:129 doi:10.1186/1471-2105-14-129.

26. S.-H. Lee, M. Shamaiah, H. Vikalo, and S. Vishwanath, "Message-passing algorithms for coordinated spectrum sensing in cognitive radio networks," *IEEE Communication Letters*, vol. 17, no. 4, April 2013, pp: 812-815.

27. M. Shamaiah, S.-H. Lee, S. Vishwanath, and H. Vikalo, "Distributed algorithms for spectrum access in cognitive radio relay networks," *IEEE Journal on Sel. Areas in Communications - Cognitive Radio Series*, vol. 30, no. 10, November 2012, pp: 1947-1957.

28. T. Wu and H. Vikalo, "Joint parameter estimation and base-calling for pyrosequencing systems," *IEEE Transactions on Signal Processing*, vol. 60, no. 8, August 2012, pp. 4376-4386.

29. M. Shamaiah, S. Banerjee, and H. Vikalo, "Greedy sensor selection under channel uncertainty," *IEEE Wireless Communications Letters*, vol. 1, no. 4, August 2012, pp: 376-379.

30. S. Das and H. Vikalo, "OnlineCall: Fast online parameter estimation and base calling for Illumina's next-generation sequencing," *Bioinformatics*, 2012, doi:10.1093/bioinformatics/bts256.

31. X. Shen and H. Vikalo, "ParticleCall: A particle filter for base calling in next-generation sequencing systems," *BMC Bioinformatics*, vol. 13, no. 160, July 2012.

32. M. Shamaiah, X. Shen, and H. Vikalo, "Estimating parameters of sampled diffusion processes in affinity biosensors," *IEEE Transactions on Signal Processing*, vol. 60, no. 6, June 2012, pp: 3228-3239.

33. M. Shamaiah, S.-H. Lee, and H. Vikalo, "Graphical models and inference on graphs in genomics," *IEEE Signal Processing Magazine*, vol. 29, no. 1, January 2012, pp: 51-65.

34. M. Shamaiah and H. Vikalo, "Estimating time-varying sparse signals under communication constraints," *IEEE Transactions on Signal Processing*, vol. 59, no. 6, June 2011, pp. 2961-2964.

35. H. Vikalo and M. Gokdemir, "An MCMC algorithm for estimation in real-time biosensor arrays," *EURASIP Journal on Advances in Signal Processing, Special Issue on Genomic Signal Processing*, 2010, doi:10.1155/2010/736301.

36. X. Shen and H. Vikalo, "Inferring parameters of gene regulatory networks via particle filtering," *EURASIP Journal on Advances in Signal Processing, Special Issue on Genomic Signal Processing*, 2010, doi:10.1155/2010/204612.

37. H. Vikalo, B. Hassibi, and A. Hassibi, "Limits of performance of quantitative polymerase chain reaction systems," *IEEE Transactions on Information Theory, Special Issue on Molecular Biology and Neuroscience*, vol. 56, no. 2, February 2010, pp: 1-8.

38. M. El-Khamy, H. Vikalo, B. Hassibi, and R. J. McEliece, "Bounds on the performance of sphere decoding of linear block codes," *IEEE Transactions on Communications*, vol. 57, no. 10, October 2009, pp: 2940-2950.

39. A. Hassibi, H. Vikalo, J.-L. Reichmann, and B. Hassibi, "Real-time DNA microarray analysis," *Nucleic Acids Research*, vol. 37, no. 20, 2009, e132:1-12.

40. S. Das, H. Vikalo, and A. Hassibi, "On scaling laws of biosensors," *Journal of Applied Physics*, vol. 105, no. 10, pp. 102021-102021-7, May 2009.

41. H. Vikalo, B. Hassibi, and A. Hassibi, "Modeling and estimation for real-time microarrays," *IEEE Journal of Selected Topics in Signal Processing, Special Issue on Genomic and Proteomic Signal Processing*, vol. 2, no. 3, June 2008, pp: 286-296.

42. F. Parvaresh, H. Vikalo, S. Misra, and B. Hassibi, "Recovering sparse signals using sparse measurement matrices in compressed DNA microarrays," *IEEE Journal of Sel. Topics in Signal Processing, Special Issue on Genomic and Proteomic Signal Processing*, vol. 2, no. 3, June 2008, pp: 275-285.

43. M. Stojnic, H. Vikalo, and B. Hassibi, "An H-infinity design approach to improve the speed of the sphere decoding algorithm," *IEEE Transactions on Signal Processing*, vol. 56, no. 2, Feb. 2008, pp. 712-726.

44. A. Hassibi, H. Vikalo, and A. Hajimiri, "On noise processes and limits of performance in biosensors," *Journal of Applied Physics*, vol. 102, no. 1, July 2007, pp. 014909-014909-12.

45. H. Vikalo and B. Hassibi, "On joint detection and decoding of linear block codes on Gaussian vector channels," *IEEE Transactions on Signal Processing*, vol. 54, no. 9, September 2006, pp. 3330-3342.

46. M. Stojnic, H. Vikalo, and B. Hassibi, "Maximizing the sum-rate of multi-antenna broadcast channels using linear preprocessing," *IEEE Trans. on Wireless Comm.*, vol. 5, no. 9, Sept. 2006, pp. 2338-42.

47. H. Vikalo, B. Hassibi, and P. Stoica, "Joint ML channel estimation and signal detection," *IEEE Transactions on Wireless Communications*, vol. 5, no. 7, July 2006, pp. 1838-1845.

48. H. Vikalo, B. Hassibi, and U. Mitra, "Sphere-constrained ML detection for frequency-selective channels," *IEEE Transactions on Communications*, vol. 54, no. 7, July 2006, pp. 1179-1183.

49. H. Vikalo, A. Hassibi, and B. Hassibi, "A statistical model for microarrays, optimal estimation algorithms, and limits of performance," *IEEE Transactions on Signal Processing, Special Issue on Genomic Signal Processing*, vol. 54, no. 6, June 2006, pp. 2444-2455.

50. H. Vikalo and B. Hassibi, "On sphere decoding algorithm. II. Generalizations, second-order statistics, and applications to communications," *IEEE Transactions on Signal Processing*, vol. 53, no. 8, Aug. 2005, pp. 2819-34.

51. B. Hassibi and H. Vikalo, "On sphere decoding algorithm. I. Expected complexity," *IEEE Transactions on Signal Processing*, vol. 53, no. 8, August 2005, pp. 2806-2818 .

52. H. Vikalo, B. Hassibi, A. Erdogan, and T. Kailath, "On H-infinity design techniques for robust signal reconstruction in noisy filter banks," *EURASIP Signal Proc.*, vol. 85, no. 1, Jan. 2005, pp. 1-14.

53. H. Vikalo, B. Hassibi, and T. Kailath, "Iterative decoding for MIMO channels via modified sphere decoder," *IEEE Trans. on Wireless Communications*, vol.3, no. 6, November 2004, pp. 2299-2311.

54. H. Vikalo, B. Hassibi, B. Hochwald, and T. Kailath, "On the capacity of frequency-selective channels in training-based transmission schemes," *IEEE Transactions on Signal Processing*, vol. 52, no. 9, Sept. 2004, 2572-83.

55. H. Vikalo and B. Hassibi, "On ML sequence detection for multiple antenna systems over dispersive channels," *EURASIP J. Appl. Sig. Proc., Special Issue on Space-Time Coding*, May 2002, pp. 525-31.

Papers in Conference and Workshop Proceedings

1. M. Ghasemi, A. Hashemi, H. Vikalo, and U. Topcu, "No-regret learning with high-probability in adversarial Markov decision processes," *37th Conference on Uncertainty in Artificial Intelligence (UAI)*, July 27th - July 29th, 2021. (Acceptance rate: 26.5%).

2. M. Stecklein, H. Beytur, H. Vikalo and G. de Veciana, "Optimizing resource constrained distributed collaborative sensing," *WS-16: Workshop on Spectrum Sharing Technology for Next Generation Communications, IEEE Int'l Conference on Communications*, Montreal, Canada, June 14-23, 2021.

3. Y. Chen, A. Hashemi, and H. Vikalo, "Decentralized optimization on time-varying directed graphs under communication constraints," *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Toronto, Canada, June 6-11, 2021.

4. A. Hashemi, H. Vikalo, and G. de Veciana, "On the performance-complexity tradeoff in stochastic greedy weak submodular optimization," *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Toronto, Canada, June 6-11, 2021.

5. Z. Ke and H. Vikalo, "Real-time radio modulation classification with an LSTM auto-encoder," *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Toronto, Canada,

June 6-11, 2021.

6. M. Ghasemi, A. Hashemi, U. Topcu and H. Vikalo, "Online learning with implicit exploration in episodic Markov decision processes," *The 2021 American Control Conference (ACC)*, New Orleans, LA, May 26-28, 2021.

7. S. Lee, X. Zheng, J. Hua, H. Vikalo, and C. Julien, "Opportunistic federated learning: An exploration of egocentric collaboration for pervasive computing applications," *IEEE International Conference on Pervasive Computing and Communications (PerCom)*, Kassel, Germany, March 22-26, 2021. (Acceptance rate: 14.8%).

8. Z. Ke and H. Vikalo, "A convolutional auto-encoder for haplotype assembly and viral quasispecies reconstruction," *Thirty-fourth Conference on Neural Information Processing Systems (NeurIPS)*, December 6-12, 2020. (Acceptance rate: 20%).

9. M. Ghasemi, A. Hashemi, H. Vikalo, and U. Topcu, "Identifying low-dimensional structures in Markov Chains: A nonnegative matrix factorization approach," *The 2020 American Control Conference (ACC)*, Denver, CO, July 1-3, 2020.

10. M. Usman, W. Wang, M. Vasic, K. Wang, H. Vikalo, and S. Khurshid, "A study of the learnability of relational properties," *The 41st ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI 2020)*, London, UK, June 15-20, 2020. (Acceptance rate: 22.1%).

11. Z. Ke and H. Vikalo, "A graph auto-encoder for haplotype assembly and viral quasispecies reconstruction," *The 34th AAAI Conference on Artificial Intelligence (AAAI-20)*, New York, NY, February 7-12, 2020. (Acceptance rate: 20.6%).

12. S. Consul and H. Vikalo, "Reconstructing intra-tumor heterogeneity via convex optimization and branch-and-bound search," *The 10th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM BCB)*, Niagara Falls, NY, September 7-10, 2019.

13. A. Sankararaman, H. Vikalo, and F. Baccelli, "ComHapDet: A spatial community detection algorithm for haplotype assembly," *The 6th International Workshop on Computational Network Biology: Modeling, Analysis, and Control (CNB-MAC)*, Niagara Falls, NY, September 7-10, 2019.

14. S. Mourad, A. Tewfik and H. Vikalo, "Weighted subset selection for fast SVM training," *The 27th European Signal Processing Conference (EUSIPCO)*, Coruña, Spain, September 2-6, 2019.

15. M. Ghasemi, A. Hashemi, U. Topcu and H. Vikalo, "On submodularity of quadratic observation selection in constrained networked sensing systems," *The 2019 American Control Conference (ACC)*, Philadelphia, PA, July 10-12, 2019.

16. A. Hashemi, M. Ghasemi, H. Vikalo and U. Topcu, "Submodular observation selection and information gathering for quadratic models," 2019 International Conference on Machine Learning (ICML), Long Beach, CA, June 10-15, 2019. (Acceptance rate: 22.6%).

17. S. Mourad, H. Vikalo and A. Tewfik, "Online selective training for faster neural network learning," *IEEE Data Science Workshop (DSW)*, Minneapolis, MN, June 2-5, 2019.

18. R. Shafipour, A. Hashemi, G. Mateos and H. Vikalo, "Online topology inference from streaming stationary graph signals," *IEEE Data Science Workshop (DSW)*, Minneapolis, MN, June 2-5, 2019.

19. S. Consul, A. Hashemi and H. Vikalo, "A MAP framework for support recovery of sparse signals using orthogonal least squares," *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Brighton, UK, May 12-17, 2019.

20. A. Hashemi and H. Vikalo, "Evolutionary subspace clustering: Discovering structure in self-expressive time-series data," *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Brighton, UK, May 12-17, 2019.

21. M. Ribero, D. Chizhik, R. A. Valenzuela, R. W. Heath Jr. and H. Vikalo, "Deep learning propagation models over irregular terrain," *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Brighton, UK, May 12-17, 2019.

22. A. Hashemi, O. F. Kilic, and H. Vikalo, "Near-optimal distributed estimation for a network of sensing units operating under communication constraints," *57th IEEE Conference on Decision and Control (CDC)*, Miami Beach, FL, Dec. 17-19, 2018.

23. A. Hashemi, R. Shafipour, H. Vikalo and G. Mateos, "A novel scheme for support identification and iterative sampling of bandlimited graph signals," *2018 IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, Anaheim, CA, November 26-29, 2018.

24. S. Ahn, Z. Ke and H. Vikalo, "Viral quasispecies reconstruction via tensor factorization with successive removal," *26th Conference on Intelligent Systems for Molecular Biology (ISMB)*, Chicago, IL, July 6-10, 2018. (Acceptance rate: 19.6%).

25. A. Hashemi, M. Ghasemi, H. Vikalo and U. Topcu, "A randomized greedy algorithm for near-optimal sensor scheduling in large-scale sensor networks," *The 2018 American Control Conference (ACC)*, Milwaukee, WI, June 27-29, 2018. (Best student paper award finalist).

26. A. Hashemi, R. Shafipour, H. Vikalo and G. Mateos "Sampling and reconstruction of graph signal via weak submodularity and semidefinite relaxation," *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Calgary, Alberta, Canada, April 15-20, 2018.

27. S. Ahn, Z. Ke and H. Vikalo, "Viral quasispecies reconstruction via tensor factorization," *55th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, October 3-6, 2017 (invited).

28. S. Mourad, A. Tewfik and H. Vikalo, "Data subset selection for efficient SVM training," *The 25th European Signal Processing Conference (EUSIPCO)*, Kos island, Greece, August 28 - September 2, 2017.

29. A. Hashemi, B. Zhu and H. Vikalo, "Sparse tensor decomposition for haplotype assembly of diploids and polyploids," *The 4th International Workshop on Computational Network Biology: Modeling, Analysis, and Control (CNB-MAC)*, Boston, MA, August 20-23, 2017.

30. S. Ahn and H. Vikalo, "aBayesQR: A Bayesian method for reconstruction of viral populations charac-

terized by low diversity," *The 21st Annual International Conference on Research in Computational Molecular Biology (RECOMB)*, Hong Kong, May 3-7, 2017. (Acceptance rate: 21%).

31. X. Zheng, H. Vikalo, S. Song, L. K. John and A. Gerstlauer, "Sampling-based binary-level cross-platform performance estimation," *Design, Estimation and Test in Europe (DATE)*, Lausanne, Switzerland, March 27-31, 2017. (Acceptance rate: 24%).

32. A. Hashemi and H. Vikalo, "Recovery of sparse signals via branch-and-bound least squares," *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, New Orleans, LA, March 5-9, 2017.

33. N. M. Arzeno and H. Vikalo, "Evolutionary affinity propagation," *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, New Orleans, LA, March 5-9, 2017.

34. S. Barik and H. Vikalo, "Binary matrix completion with performance guarantees for single individual haplotyping," *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, New Orleans, LA, March 5-9, 2017.

35. A. Hashemi and H. Vikalo, "Sparse linear regression via generalized orthogonal least-squares," *2016 IEEE GlobalSIP Symposium on Signal Processing of Big Data*, Washington DC, December 2016.

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Short Bio

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