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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

'26, '25, '23 *Statistical Machine Learning* (graduate)
'24 *Genomic Signal Processing and Data Science* (graduate)
'22 *Estimation Theory* (graduate)
'22-'25 *Digital Signal Processing* (undergraduate)

Selected Honors and Awards

2025 Temple Foundation Endowed Professorship No. 3
2021-2025 William W. Hagerty Fellowship in Engineering (UT Cockrell School of Engineering)
2017 Jack Kilby/Texas Instruments Endowed Faculty Fellowship in Computer Engineering (UT ECE)
2015 IEEE Senior Member
2013 Jack Kilby/Texas Instruments Endowed Faculty Fellowship in Computer Engineering (UT ECE)
2009 National Science Foundation CAREER Award

Memberships in Professional Societies

Institute of Electrical and Electronics Engineers (IEEE), Senior Member
IEEE Signal Processing Society

University and College Committee Assignments

Departmental

2013–present DICE Academic Track Graduate Advisor
2024–present Faculty Annual Review Committee

2025–2026 Member, ECE Junior Faculty Recruiting Committee
2016–2025 bioECE Academic Track Admission Coordinator
2024–2025 Member, ECE Junior Faculty Recruiting Committee
2018–2019 Member, ECE Junior Faculty Recruiting Committee
2017–2018 Member, ECE Junior Faculty Recruiting Committee
2016–2017 Member, ECE Junior Faculty Recruiting Committee
2014–2015 Member, ECE Junior Faculty Recruiting Committee
2013–2014 Member, ECE Junior Faculty Recruiting Committee
2007–present Member, DICE Academic Track Admission Committee
2014–present Annual WNCG Open House Coordinator
2014 ECE Benchmarking/Directions Committee
2013 ECE Recruiting Vision Committee
2012–2013 DICE pre-qual committee
2016–2017 DICE pre-qual committee
2012–2015 Major Sequence Appeals Committee

College

2025–present CSE Degrees & Courses Committee
2011–2012 Systems Biology faculty recruitment committee

University

2019–2020 Provost's Health Translation Opportunities Committee for Oncology
2024–2025 VPR Office Internal Competition Google Fellowship Committee
2025–2026 VPR Office Internal Competition Google Fellowship Committee

Community Activities and Professional Service

2018 - present Associate Editor, IEEE Trans. on Molecular, Biol. and Multi-Scale Communications
2026 Area Chair, The Fortieth Annual Conference on Neural Information Processing Systems (NeurIPS)
2025 Technical Program Chair, 30th International Conference on Information, Communication, and Automation Technologies (ICAT 2025), Sarajevo, Bosnia and Herzegovina
2023 Technical Program Chair, 29th International Conference on Information, Communication, and Automation Technologies (ICAT 2023), Sarajevo, Bosnia and Herzegovina
2022 Program Committee Member, 7th International Workshop on Computational Network Biology (CNB-MAC), Chicago, IL
2022 Program Chair, 28th International Conference on Information, Communication and Automation Technologies (ICAT 2022), Sarajevo, Bosnia and Herzegovina
2022 NIH Proposal Panel Reviewer
2022 Technical Program Committee Member, 5th International Workshop on Computational Network Biology (CNB-MAC), Chicago, IL
2021 Senior Program Committee Member, the 35th AAAI Conference on Artificial Intelligence
2021 NSF Proposal Panel Reviewer, CCF Program
2019 Technical Program Committee Member, 6th International Workshop on Computational Network Biology (CNB-MAC), Niagara Falls, NY
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 Proposal Panel Reviewer, 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 Proposal Panel Reviewer, 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

Usman Akram, Seohyeon Cha, Haoran Zhang, Dongjun Kim, John Robertson, Kutay Tire

PhD Supervisions Completed

2025 Huancheng Chen

2024 Shorya Consul

2023 Yiyue Chen

2022 Monica Ribero

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

2024 Ahmet Aydin

2022 Sameer Bibikar, Huancheng Chen

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

Grants and Contracts

Total funding $6,153,799. My share $4,444,329.

2024–2025 Towards Situational Understanding at the Tactical Edge: Uncertainty-Driven Agile Machine Learning System ($1,038,940, co-PI with Prof. G. de Veciana, my share $519,470). Agency: Army Research Laboratory.

2024–2025 Federated Learning in Large-Scale Systems: Training Personalized Models on Heterogeneous Time-Series Data ($120,000, PI). Agency: Toyota.

2022–2025 RINGS: Scalable and Resilient Networked Learning Systems ($630,000, co-PI with Prof. G. de Veciana, my share $315,000). Agency: National Science Foundation.

2022–2023 The Value of Side Information in Sensing ($60,000, co-PI with Prof. G. de Veciana). Agency: Honda.

2023 Federated Learning for Vehicular Systems under Communication and Computation Constraints ($118,000, PI). Agency: Toyota.

2022 Federated Learning for Vehicular Systems under Communication and Computation Constraints ($77,100, PI). Agency: Toyota.

2021–2025 FET: Small: Accurate and Scalable Methods for Analysis of Complex Genomic Populations ($500,000, PI). Agency: National Science Foundation.

2020–2022 RAPID: Methods for Reconstructing Disease Transmissions from Viral Genomic Data with Application to COVID-19 ($100,000, PI). Agency: National Science Foundation.

2019–2022 Distributed Learning under Privacy and Resource Constraints ($480,000, co-PI with Profs. C. Julien and A. Gerstlauer, my share $160,000). Agency: Army Futures Command.

2019–2022 RF-Based Wireless Network Tomography ($540,000, co-PI with Prof. G. de Veciana, my share $270,000). Agency: Army Futures Command.

2018–2022 Visibility and Interactive Information Sharing in Collaborative Sensing Systems ($450,000, co-PI with Prof. G. de Veciana, my share $225,000). Agency: National Science Foundation.

2018–2019 Situational Awareness via Interactive Information Sharing in Collaborative Sensing Systems ($50,000, co-PI with Prof. G. de Veciana, my share $25,000). Agency: Qualcomm.

2016–2019 Reconstructing Mixtures of DNA Sequences from High-Throughput Sequencing Data ($400,000, PI). Agency: National Science Foundation.

2014–2016 RAPID: Methods for Estimating Genetic Diversity of the Ebola Virus ($200,000, PI). Agency: National Science Foundation.

2013–2017 Algorithms for Haplotype Assembly from Next-Generation Sequencing Data ($400,000, PI). Agency: National Science Foundation.

2013–2018 WNCG Industrial Affiliates ($71,000, PI). Agency: Industry (various).

2011–2013 Algorithms for Base-Calling in Sequencing-By-Synthesis ($352,259, PI). Agency: National Institutes of Health.

2009–2013 Modeling, Estimation, and Coding for Biosensor Arrays ($400,000, PI). Agency: National Science Foundation (CAREER Award).

2010–2011 Next Generation Sequencing: Signal Processing Perspective ($122,500, PI). Agency: National Science Foundation.

2009–2013 WNCG Industrial Affiliates ($44,000, PI). Agency: Industry (various).

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. U. Akram, F. Zhang, Y. Li and H. Vikalo, "Diffusion-Based Channel Inpainting for Robust SRS-Based CSI Acquisition," *IEEE Communication Letters*, 2026 (submitted).

2. S. Ahn, H. Chen and H. Vikalo, "FedProTIP: Task-Agnostic Federated Continual Learning via Replay-Free Gradient Projection," *Transactions on Machine Learning Research*, 2026 (submitted).

3. H. Zhang, S. Cha, H. B. Beytur, K. Chan, G. De Veciana and H. Vikalo, "Online Learning for Multi-Layer Hierarchical Inference under Partial and Policy-Dependent Feedback" (submitted).

4. S. Cha, H. Chen, D. Kim, H. Zhang, K. Chan, G. de Veciana and H. Vikalo, "CoreQ: Learning-Free Mismatch Correction and Successive Rounding for Quantization" (submitted).

5. D. Kim, A. de Wynter, H. Chen, H. Kim and H. Vikalo, "Foundation-Preserving Adaptation via Generalized Rayleigh-Quotient Optimization" (submitted).

6. J. Zhu, Y. Ro, J. Robertson, K. Wang, J. Li, H. Vikalo, A. Akella and Z. Wang, "Long-Lived AI Agents Age Too: They Quietly Decay After Deployment" (submitted).

7. D. Kim, H. Zhang, C. Wang and H. Vikalo, "Class-Incremental Learning with Zero-Shot Unlearning via Activation Disentanglement" (submitted).

8. J. Robertson, J. Zhu, H. Vikalo and Z. Wang, "When Is Rank-1 Steering Cheap? Geometry, Granularity, and Budgeted Search" (submitted).

Journal Papers

1. U. Akram and H. Vikalo, "Transformers as Implicit State Estimators: In-Context Learning in Dynamical Systems," *Transactions on Machine Learning Research*, April 2026, pp. 2835-8856.

2. A. Aydin, A. G. Aydin, C. Turhan and H. Vikalo, "Managing task offloading in viewport prediction via reinforcement learning," *IEEE Access*, vol. 14, pp. 44043-44054, 2026.

3. J. Robertson, S. Consul, and H. Vikalo, "NextVir: Enabling classification of tumor-causing viruses with genomic foundation models," *PLoS Computational Biology*, 21(8): e1013360, Aug 2025.

4. S. Consul, J. Robertson and H. Vikalo, "XVir: A transformer-based architecture for identifying viral reads from cancer samples," *Journal of Computational Biology*, vol. 32, no. 7, July 2025, pp: 646-658.

5. Y. Chen, A. Hashemi and H. Vikalo, "Accelerated distributed stochastic non-convex optimization over Time-Varying Directed Networks," *IEEE Transactions on Automatic Control*, vol. 70, no. 4, April 2025, pp: 2196-2211.

6. A. G. Aydin and H. Vikalo, "Viewport prediction via adaptive edge offloading," *IEEE Networking Letters*, vol. 7, no. 1, March 2025, pp: 21-25.

7. M. Ribero, H. Vikalo and G. de Veciana, "Federated learning at scale: Addressing client intermittency and resource constraints," *IEEE Journal of Selected Topics in Signal Processing*, vol. 19, no. 1, Jan. 2025, pp: 60-73.

8. S. Consul, Z. Ke and H. Vikalo, "XHap: Haplotype assembly using long-distance read correlations learned by transformers," *Bioinformatics Advances*, vol. 3, no. 1, Nov. 2023, pp: 1-11.

9. M. Ribero and H. Vikalo, "Reducing communication in federated learning via efficient client sampling," *Pattern Recognition*, vol. 148, April 2024, pp. 110122.

10. M. Sakthi, M. Arvinte and H. Vikalo, "Automotive RADAR sub-sampling via object detection networks: Leveraging prior signal information," *IEEE Open Journal of Intelligent Transportation Systems*, vol. 4, November 2023.

11. Z. Ke and H. Vikalo, "Graph-based reconstruction and analysis of disease transmission networks using viral genomic data," *Journal of Computational Biology*, 30(7):796-813, Jun 2023.

12. M. Ribeiro, H. Vikalo and G. de Veciana, "Federated learning under intermittent client availability and time-varying communication constraints," *IEEE Journal of Selected Topics in Signal Processing*, vol. 17, no. 1, January 2023.

13. A. Hashemi, A. Acharya, R. Das, H. Vikalo, S. Sanghavi, and I. Dhillon, "On the benefits of multiple gossip steps in communication-constrained decentralized federated learning," *IEEE Transactions on Parallel and Distributed Systems, Special Section on Parallel and Distributed Computing Techniques for AI, ML, and DL*, vol. 33, no. 11, November 2022.

14. Y. Chen, A. Hashemi and H. Vikalo, "Communication-efficient variance-reduced decentralized stochastic optimization over time-varying directed graphs," *IEEE Transactions on Automatic Control*, vol. 67, no. 12, December 2022.

15. M. Ribero, J. Henderson, S. Williamson, and H. Vikalo, "Federated recommendations using differentially private prototypes," *Pattern Recognition*, vol. 129, September 2022, 108746.

16. A. Hashemi, H. Vikalo, and G. de Veciana, "On the benefits of progressively increasing sampling sizes in stochastic greedy weak submodular maximization," *IEEE Transactions on Signal Processing*, vol. 70, pp. 3978-3992, July 2022.

17. A. Hashemi, R. Shafipour, H. Vikalo, and G. Mateos, "Towards accelerated greedy sampling and reconstruction of bandlimited graph signals," *Signal Processing*, vol. 195, June 2022.

18. Z. Ke and H. Vikalo, "Real-Time Radio Technology and Modulation Classification via an LSTM Auto-Encoder," *IEEE Transactions on Wireless Communications*, vol. 21, no. 1, January 2022.

19. 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.

20. 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.

21. 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.

22. 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.

23. 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.

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

25. 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.

26. 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.

27. 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.

28. 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.

29. 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.

30. 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.

31. 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.

32. 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.

33. 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.

34. 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.

35. 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.

36. 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.

37. 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.

38. 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.

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

40. 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.

41. 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.

42. 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.

43. 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.

44. 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.

45. 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.

46. 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.

47. 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.

48. 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.

49. 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.

50. 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.

51. 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.

52. 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.

53. 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.

54. 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.

55. 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.

56. 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.

57. 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.

58. 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.

59. 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.

60. 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.

61. 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.

62. 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.

63. 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.

64. 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.

65. 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.

66. 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.

67. 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.

68. 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.

69. 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 .

70. 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.

71. 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.

72. 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.

73. 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. H. Zhang, D. Kim, S. Cha and H. Vikalo, "FedRot-LoRA: Mitigating Rotational Misalignment in Federated LoRA," *The International Conference on Machine Learning (ICML)*, July 2026.

2. S. Cha, K. Chan, G. de Veciana and H. Vikalo, "Joint Model Onloading and Offloading for Hierarchical Multi-Task Inference," *IEEE International Conference on Machine Learning for Communication and Networking (ICMLCN)*, June 2026.

3. H. B. Beytur, G. de Veciana, H. Vikalo and K. Chan, "Optimal Resource Allocation for ML Model Training and Deployment under Concept Drift," *IEEE International Conference on Machine Learning for Communication and Networking (ICMLCN)*, June 2026.

4. Y. Chen, U. Akram, C. Wang and H. Vikalo, "Adaptive Evolutionary Clustering for Federated Learning under Nonstationary Client Distributions," *2nd International Conference on Federated Learning and Intelligent Computing Systems (FLICS2026)*, Valencia, Spain, June 2026.

5. U. Akram, M. Graham and H. Vikalo, "PRISM-AMC: Replay-Free Continual Learning for Automatic Modulation Classification," *2nd International Conference on Federated Learning and Intelligent Computing Systems (FLICS2026)*, Valencia, Spain, June 2026.

6. H. Chen, J. Li, W. Zhuang, H. Vikalo and L. Lyu, "Training-Free Layout-to-Image Generation with Marginal Attention Constraints," *CVPR 3rd Workshop on Efficient and On-Device Generation (EDGE)*, June 2026.

7. D. Kim, S. Cha, H. Chen, C. Wang and H. Vikalo, "Quantized Gradient Projection for Memory-Efficient Continual Learning," *The Fourteenth International Conference on Learning Representations (ICLR)*, April 2026.

8. U. Akram, F. Zhang, S. Ma, Y. Li and H. Vikalo, "Super capacity SRS design for 5G and beyond using channel in-painting," *IEEE Conference on Acoustic, Speech and Signal Processing (ICASSP)*, April 2025.

9. U. Akram, Y. Chen and H. Vikalo, "Federated self-supervised learning for automatic modulation classification in heterogeneous settings," *IEEE 26th International Workshop on Signal Processing and Artificial Intelligence for Wireless Communications (SPAWC)*, July 2025.

10. H. Chen and H. Vikalo, "Heterogeneity-Guided Client Sampling: Towards Fast and Efficient Non-IID Federated Learning," *Thirty-eight Conference on Neural Information Processing Systems (NeurIPS)*, December 2024.

11. H. Chen and H. Vikalo, "Recovering labels from local updates in federated learning," *Proceedings of the Forty-first International Conference on Machine Learning (ICML)*, Vienna, Austria, July 22-26, 2024.

12. H. Chen and H. Vikalo, "Mixed-precision quantization for federated learning on resource-constrained heterogeneous devices," *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, Seattle, WA, June 17-21, 2024, pp: 6138-6148.

13. H. B. Beytur, A. Aydin, G. de Veciana and H. Vikalo, "Optimization of offloading policies for accuracy-delay tradeoffs in hierarchical inference," *IEEE International Conference on Computer Communications (INFOCOM '24)*, May 20-23, Vancouver, BC, Canada, pp: pp. 1989-1998.

14. Y. Chen, C. Wang and H. Vikalo, "Fed-QSSL: A framework for personalized federated learning under bitwidth and data heterogeneity," *38th AAAI Conference on Artificial Intelligence (AAAI '24)*, Vancouver, BC, Canada,

February 20-27, 2024, pp: 11443-11452.

15. S. Consul, J. Robertson and H. Vikalo, "XVir: A transformer-based architecture for identifying viral reads from cancer samples," *The Eighth International Workshop on Computational Network Biology: Modeling, Analysis, and Control (CNB-MAC)*, Houston, TX, September 2023 (8 pages).

16. H. Chen and H. Vikalo, "Federated learning in non-IID settings aided by differentially private synthetic data," *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, Vancouver, Canada, June 18-22, 2023, pp. 5026-5035.

17. H. Chen, C. Wang and H. Vikalo, "The best of both worlds: Accurate global and personalized models through federated learning with data-free hyper-knowledge distillation," *International Conference on Learning Representations (ICLR)*, Kigali, Rwanda, May 1-5, 2023.

18. Y. Chen, A. Hashemi and H. Vikalo, "Accelerated distributed stochastic non-convex optimization over time-varying directed networks," *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Rhodes Island, Greece, June 4-10, 2023, pp. 1-5.

19. S. Consul, H. B. Beytur, G. de Veciana, H. Vikalo, Z. Shamsi, A. Liu and J. Boksiner, "RF-based Network Inference: Learning from Channel Usage and Activity Dynamics Data," *IEEE Military Communications Conference*, November 2022.

20. M. Sakthi, A. Tewfik, M. Arvinte, and H. Vikalo, "End-to-end system for object detection from sub-sampled radar data," *Proceedings of the 30th European Signal Processing Conference (EUSIPCO)*, Belgrade, Serbia, Aug. 29 - Sept. 2, 2022, pp. 1-5.

21. Z. Ke and H. Vikalo, "Deep learning for assembly of haplotypes and viral quasispecies from short and long sequencing reads," *Proceedings of the 13th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM BCB)*, Chicago, IL, August 7-10, 2022, pp. 1-10.

22. Z. Ke and H. Vikalo, "Graph-based reconstruction and analysis of disease transmission networks using viral genomic data," *The Seventh International Workshop on Computational Network Biology: Modeling, Analysis, and Control (CNB-MAC 2022)*, Chicago, IL, August 7, 2022, pp. 1-8.

23. S. Bibikar, H. Vikalo, Z. Wang and Xiaohan Chen, "Federated dynamic sparse training: Computing less, communicating less, yet learning better," *The 36th AAAI Conference on Artificial Intelligence (AAAI-22)*, Vancouver, BC, Canada, February 21-28, 2022.

24. S. Consul, H. Beytur, G. de Veciana and H. Vikalo, "RF-based network inference: Theoretical foundations," *IEEE Military Communications Conference*, December 2021, pp: 1-6.

25. 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%).

26. 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.

27. 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.

28. 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.

29. 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.

30. 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.

31. 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%).

32. 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%).

33. 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.

34. 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%).

35. 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%).

36. 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.

37. 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.

38. 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.

39. 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.

40. 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%).

41. 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.

42. 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.

43. 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.

44. 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.

45. 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.

46. 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.

47. 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.

48. 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%).

49. 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).

50. 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.

51. 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).

52. 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.

53. 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.

54. S. Ahn and H. Vikalo, "aBayesQR: A Bayesian method for reconstruction of viral populations characterized by low diversity," *The 21st Annual International Conference on Research in Computational Molecular Biology (RECOMB)*, Hong Kong, May 3-7, 2017. (Acceptance rate: 21%).

55. 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%).

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

57. 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.

58. 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.

59. 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.

60. H. Yang, H. Vikalo, and J. Chun, "Nonnegative gridless compressive sensing for co-prime arrays," *2016 IEEE*

GlobalSIP Symposium on Sparse Signal Processing for Communications, Washington DC, December 2016.

61. V. Va, H. Vikalo, and R. Heath, "Beam tracking for mobile millimeter wave communication systems," *2016 IEEE GlobalSIP Symposium on Transceivers and Signal Processing for 5G Wireless and mm-Wave Systems*, Washington DC, December 2016.

62. C. Cai, S. Sanghavi, and H. Vikalo, "Structurally-constrained gradient descent for matrix factorization in haplotype assembly problems," *IEEE International Conference on Acoustic, Speech and Signal Processing (ICASSP)*, Shanghai, March 2016.

63. T. Goodall, A. C. Bovik, H. Vikalo, and N. G. Paulter Jr., "Non-uniformity correction of IR images using natural scene statistics," *IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, Orlando, FL, December 2015.

64. A. Gupta, S. Barik, and H Vikalo, "Distributed self localization of sensors with Poisson deployment using extended Kalman filter," *2015 IEEE Wireless Communications and Networking Conference (WCNC)*, New Orleans, LA, March 2015, pp: 1500-1505.

65. S. Das and H. Vikalo, "Optimal haplotype assembly with statistical pruning," *IEEE GlobalSIP14 - Workshop on Genomic Signal Proc. and Statistics*, Atlanta, GA, Dec. 2014.

66. S. Das and H. Vikalo, "Single individual haplotyping with low rank semidefinite programming," *NIPS 2014 Workshop on Machine Learning in Computational Biology (MLCB)*, Montreal, Canada, December 2014.

67. H. Si, H. Vikalo and S. Vishwanath, "Haplotype assembly: An information-theoretic view," *IEEE Information Theory Workshop*, Tasmania, Australia, November 2-5, 2014.

68. Z. Puljiz and H. Vikalo, "Iterative learning of single individual haplotypes from high-throughput DNA sequencing data," *8th International Symposium on Turbo Codes and Iterative Information Processing (ISTC)*, Bremen, Germany, August 2014.

69. S. Ahn and H. Vikalo, "Deterministic sequential Monte Carlo for haplotype inference," *IEEE Global Conference on Signal and Information Processing*, Austin, TX, December 2-4, 2013.

70. Z. Puljiz and H. Vikalo, "Message-passing algorithms for haplotype assembly," *Asilomar Conference on Systems, Signals & Computers*, Asilomar, November 3-6, 2013 (invited).

71. N. Arzeno-Gonzales and H. Vikalo, "Exploiting time series properties for mortality prediction in pediatric brain injury," *Workshop on Role of Machine Learning in Transforming Healthcare, International Conference on Machine Learning*, Atlanta, June 16-21, 2013.

72. X. Shen, M. Shamaiah, and H. Vikalo, "Message passing algorithm for inferring consensus sequence from next-generation sequencing data," *IEEE International Symposium on Information Theory*, Istanbul, Turkey, July 7-12, 2013.

73. S. Barik and H. Vikalo, "Expected complexity of sphere decoding for sparse integer least-square problems," *IEEE Intern'l Conf. on Acoustic, Signal, and Speech Processing*, Vancouver, Canada, May 26-31, 2013.

74. X. Shen and H. Vikalo, "A message-passing algorithm for reference-guided sequence assembly from high-throughput sequencing data," *IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS)*, Washington, D.C., TX, December 2012.

75. C. H. Lee, N. M. Arzeno, J. C. Ho, H. Vikalo, and J. Ghosh, "An imputation-enhanced algorithm for ICU mortality prediction," *Computing in Cardiology (CinC)*, Krakow, Poland, September 2012.

76. M. Shamaiah and H. Vikalo, "Base calling error rates in next-generation DNA sequencing," *IEEE Workshop on Statistical Signal Processing*, Ann Arbor, MI, August 2012.

77. M. Park, M. Nassar, B. Evans, and H. Vikalo, "Adaptive experimental design for drug combinations," *IEEE Workshop on Statistical Signal Processing,* Ann Arbor, MI, August 2012.

78. X. Shen and H. Vikalo, "A sequential Monte Carlo base-calling method for next-generation DNA sequencing," in Proc. of the 2011 IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS), San Antonio, TX, December 2011, pp: 121-122.

79. T. Wu and H. Vikalo, "An MCMC Algorithm for base calling in sequencing-by-synthesis," in Proc. of Asilomar Conf. on Signals, Systems and Computers, Pacific Grove, CA, November 2011 (invited).

80. S.-H. Lee, M. Shamaiah, S. Vishwanath, and H. Vikalo, "A message-passing algorithm for spectrum access in cognitive radio relay networks," in Proc. of Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, November 2011.

81. S. Das and H. Vikalo, "Base-calling for Illumina's next-generation sequencing via Viterbi algorithm," in Proceedings of the 49th Annual Allerton Conference on Communication, Control, and Computing (Allerton), Monticello, IL, September 2011, pp: 1733-1736 (invited).

82. M. Shamaiah and H.Vikalo, "A dual Kalman filter for parameter-state estimation in real-time DNA microarrays," Proceedings of the IEEE Annual Int'l Conference of the Engineering in Medicine and Biology Society (EMBC), Boston, MA, Aug 30 – Sep 3, 2011, pp: 7614-7617 (invited).

83. S.-H. Lee, M. Shamaiah, and H. Vikalo, "Message-passing for base-calling in sequencing-by-synthesis systems," in Proceedings of IEEE ICASSP, Prague, Czech Republic, May 2011, pp: 777-780.

84. M. Shamaiah, S.-H. Lee, S. Vishwanath, and H. Vikalo, "Distributed routing in networks using affinity propagation," in Proceedings of IEEE ICASSP, Prague, Czech Republic, May 2011, pp: 3036-3039.

85. M. Shamaiah, X. Shen, and H. Vikalo, "Sequential Monte Carlo method for parameter estimation in diffusion models of affinity-based biosensors," in Proceedings of IEEE ICASSP, Prague, Czech Republic, May 2011, pp: 525-528.

86. M. Shamaiah, S. Banerjee, and H. Vikalo, "Greedy sensor selection: Leveraging submodularity," in Proc. of IEEE Conference on Decision and Control, Atlanta, GA, December 2010.

87. S. H. Lee, M. Shamaiah, and H. Vikalo, "Inference of gene-regulatory networks using message-passing algorithms," in Proc. of IEEE Intern. Workshop on Genomic Signal Processing and Statistics (GENSIPS), Cold Spring Harbor, NY, November 2010.

88. S. Das and H. Vikalo, "Optimal base-calling in Illumina's sequencing-by-synthesis system," in Proc. of IEEE Intern. Workshop on Genomic Signal Processing and Statistics (GENSIPS), Cold Spring Harbor, NY, November 2010.

89. M. Shamaiah, X. Shen, and H. Vikalo, "On parameter estimation for diffusion processes in real-time biosensors," in Proc. of IEEE Asilomar Conf. on Signals, Systems and Computers, Pacific Grove, CA, November 2010.

90. S.-H. Lee, M. Shamaiah, and H. Vikalo, "Optimal Estimation in DNA Microarrays via Global Optimization," in Proc. of IEEE Asilomar Conf. on Signals, Systems and Computers, Pacific Grove, CA, November 2010.

91. T. Wu and H. Vikalo, "Maximum likelihood DNA sequence detection via sphere decoding," in Proceedings of IEEE ICASSP, Dallas, TX, March 2010.

92. X. Shen and H. Vikalo, "Inferring parameters of gene regulatory networks via particle filtering," in Proceedings of IEEE ICASSP, Dallas, TX, March 2010.

93. S. H. Lee, H. Vikalo, and S. Vishwanath, "Further results on message-passing algorithms for motif finding," in Proceedings of IEEE ICASSP, Dallas, TX, March 2010.

94. M. Shamaiah and H. Vikalo, "Rao-Blackwellized unscented Kalman filter for nonlinear systems with bandwidth constrains," in Proceedings of IEEE ICASSP, Dallas, TX, March 2010.

95. M. Shamaiah and H. Vikalo, "Compressed sensing for bandwidth constrained systems," in Proceedings of IEEE ICASSP, Dallas, TX, March 2010.

96. H. Vikalo and B. Hassibi, "Limits of performance of real-time microarrays," in Proc. Allerton Conference on Comm., Control, and Computing, Monticello, IL, Sept. 30 - Oct. 2, 2009 (invited).

97. M. Gokdemir and H. Vikalo, "An MCMC algorithm for parameter estimation in stochastical modeled real-time biosensor arrays," in IEEE Workshop on Statistical Sig. Proc., Cardiff, UK, August 2009.

98. S.-H. Lee, H. Vikalo, and S. Vishwanath, "Message-passing for motif finding," in IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS), Minneapolis, MN, May 2009.

99. S. Das, H. Vikalo, and A. Hassibi, "Stochastic modeling of reaction kinetics in biosensors using the Fokker-Planck equation," in IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS), Minneapolis, MN, May 2009.

100. M. Gokdemir and H. Vikalo, "A particle filtering algorithms for parameter estimation in biosensor arrays," in IEEE Workshop on Gen. Sig. Proc. and Stat. (GENSIPS), Minneapolis, MN, May 2009.

101. H. Vikalo and A. Hassibi, "Estimation in real-time affinity-based biosensors," in Proc. of IEEE Asilomar Conf. on Signals, Systems and Computers, Pacific Grove, CA, November 2008.

102. H. Vikalo, F. Parvaresh, S. Misra, and B. Hassibi, "Sparse measurements, compressed sampling, and DNA microarrays," in Proceedings of IEEE ICASSP, Las Vegas, NV, 2008.

103. H. Vikalo, B. Hassibi, and A. Hassibi, "On estimation in real-time microarrays," in Proceedings of IEEE ICASSP, Las Vegas, NV, 2008.

104. H. Vikalo, B. Hassibi, and A. Hassibi, "Signal processing aspects of real-time DNA microarrays," Comput. Advances in Multi-Sensor Adaptive Proc., St. Thomas, U.S. Virgin Islands, 2007 (invited).

105. H. Vikalo, A. Hassibi, and B. Hassibi, "Signal processing for real-time microarrays," in Proc. of IEEE Asilomar Conf. on Signals, Systems and Computers, Pacific Grove, CA, November 2007 (invited).

106. H. Vikalo, F. Parvaresh, and B. Hassibi, "On recovery of sparse signals in compressed DNA microarrays," in Proc. of IEEE Asilomar Conf. on Signals, Systems and Computers, November 2007.

107. M. Stojnic, B. Hassibi, and H. Vikalo, "PEP analysis of SDP-based non-coherent signal detection," *IEEE International Symposium on Information Theory (ISIT)*, Nice, France, June 2007.

108. H. Vikalo, B. Hassibi, M. Stojnic, and A. Hassibi, "Modeling the kinetics of hybridization in microarrays," IEEE Int'l Workshop on Genomic Sig. Proc. and Statistics (GENSIPS), Tuusula, Finland, June 2007.

109. H. Vikalo, B. Hassibi, and A. Hassibi, "ML estimation of DNA initial copy number in polymerase chain reaction processes," in Proceedings of IEEE ICASSP, Honolulu, HI, 2007.

110. M. Stojnic, B. Hassibi, and H. Vikalo, "PEP analysis of the SDP based joint channel estimation and signal detection ," in Proc. of IEEE Int. Conf. on Acoust., Speech, and Sig. Proc. (ICASSP), 2007.

111. H. Vikalo, B. Hassibi, and A. Hassibi, "Limits of performance of DNA microarrays," in Proceedings of IEEE ICASSP, Toulouse, France, May 2006.

112. H. Vikalo, A. Hassibi, and B. Hassibi, "On joint maximum-likelihood estimation of PCR efficiency and initial amount of target," in Proc. of IEEE GENSIPS, College Station, TX, May 28-30, 2006.

113. M. Stojnic, H. Vikalo, and B. Hassibi, "Further results on speeding up the sphere decoder," in Proceedings of

IEEE ICASSP, Toulouse, France, May 2006.

114. M. Stojnic, H. Vikalo, and B. Hassibi, "Asymptotic analysis of the Gaussian broadcast channel with perturbation preprocessing," in Proceedings of IEEE ICASSP, Toulouse, France, May 2006.

115. M. El-Khamy, H. Vikalo, B. Hassibi, and R. J. McEliece, "On the performance of sphere decoding of block codes," in Proceedings of IEEE International Symposium on Information Theory (ISIT), Seattle, WA, July 2006.

116. M. El-Khamy, H. Vikalo, and B. Hassibi, "Bounds on the performance of sphere decoding of linear block codes," in Proc. of IEEE-ITSOC Information Theory Workshop on Coding and Complexity (ITW), New Zealand, 2005.

117. M. Stojnic, H. Vikalo, and B. Hassibi, "An efficient H-infinity estimation approach to speed up the sphere decoder," in Proceedings of International Conference on Wireless Networks, Communications, and Mobile Computing (WirelessCom), Kaanapali Beach, Maui, Hawaii, June 13-16, 2005.

118. M. Stojnic, H. Vikalo, and B. Hassibi, "An H-infinity based lower bound to speed up sphere decoder," in Proceedings of the 6th IEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC), New York, NY, June 2005.

119. H. Vikalo, A. Hassibi, and B. Hassibi, "Optimal estimation of gene expression levels in microarrays," in Proc. of IEEE GENSIPS, Newport, RI, May 22-25, 2005.

120. A. Hassibi and H. Vikalo, "A probabilistic model for inherent noise and systematic errors of microarrays," in Proc. of IEEE GENSIPS, Newport, RI, May 22-25, 2005.

121. M. Stojnic, H. Vikalo, and B. Hassibi, "A branch-and-bound approach to speed up the sphere decoder," in Proceedings of IEEE ICASSP, Philadelphia, PA, 2005.

122. M. Stojnic, H. Vikalo, and B. Hassibi, "Maximizing the sum rate of multi-antenna broadcast channels using linear preprocessing," in Proceedings of IEEE Globecom, Dallas, TX, December 2004.

123. H. Vikalo and B. Hassibi, "Statistical approach to ML decoding of linear block codes on symmetric channels," in Proceedings of IEEE ISIT, Chicago, IL, June 2004.

124. H. Vikalo, A. Hassibi, and B. Hassibi, "Nucleic acid detection using bioluminescence regenerative cycle and statistical signal processing," in Proc. IEEE GENSIPS, Baltimore, MD, May 26-27, 2004.

125. H. Vikalo, B. Hassibi, and U. Mitra, "Sphere-constrained ML detection for channels with memory," in Proceedings of the 37th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, November 2003.

126. H. Vikalo and B. Hassibi, "On joint ML detection and decoding," in Proceedings of IEEE ISIT, Yokohama, Japan, June 2003.

127. H. Vikalo, B. Hassibi, and U. Mitra, "Sphere-constrained ML detection for frequency-selective channels," in Proceedings of IEEE ICASSP, Hong Kong, April 2003.

128. H. Vikalo, B. Hassibi, and P. Stoica, "On joint ML channel estimation and signal detection for SIMO channels," in Proceedings of IEEE ICASSP, Hong Kong, April 2003.

129. H. Vikalo and B. Hassibi, "Low-complexity iterative detection and decoding of multi-antenna systems employing channel and space-time codes," in Proceedings of the 36th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, November 2002.

130. H. Vikalo and B. Hassibi, "On the expected complexity of sphere decoding for frequency-selective channels," in Proc. of Allerton Conf. on Comm., Control, and Comput., Allerton, IL, October 2002.

131. H. Vikalo and B. Hassibi, "Modified Fincke-Pohst algorithm for low-complexity iterative decoding over multiple antenna channels," in Proceedings of IEEE ISIT, Lausanne, Switzerland, 2002.

132. H. Vikalo and B. Hassibi, "Towards closing the capacity gap on multiple antenna channels," in Proceedings of IEEE ICASSP, Orlando, FL, 2002.

133. B. Hassibi and H. Vikalo, "On the expected complexity of integer least-squares problems," in Proceedings of IEEE ICASSP, Orlando, FL, 2002.

134. H. Vikalo and B. Hassibi, "Low-complexity iterative decoding over multiple antenna channels via a modified sphere decoder," in Proceedings of Allerton Conference on Communications, Control, and Computing, Allerton, IL, October 2001.

135. B. Hassibi and H. Vikalo, "On the expected complexity of sphere decoding," in Proceedings of the 35th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, November 2001.

136. H. Vikalo, B. Hassibi, B. Hochwald, and T. Kailath, "Optimal training for frequency-selective fading channels," in Proceedings of IEEE ICASSP, Salt Lake City, UT, 2001.

137. H. Vikalo, B. Hassibi, and T. Kailath, "On robust multiuser detection," in Proceedings of the 34th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, November 2000.

138. S. Mudulodu, H. Vikalo, A. Paulraj, and T. Kailath, "CDMA multiser detection based on state-space estimation techniques," in Proceedings of the 34th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, November 2000.

139. H. Vikalo, A. T Erdogan, B. Hassibi, and T. Kailath, "Exponential-quadratic optimal signal reconstruction in noisy filter banks," in Proceedings of SPIE International Symposium on Optical Science and Technology, San Diego, CA, August 2000.

140. T. Simunic, H.Vikalo, and G. De Micheli, "Energy efficient design of portable wireless systems", in Proc. of IEEE Intern. Symposium on Low Power Electronics and Design, Rapallo, Italy, June 2000.

141. H. Vikalo, B. Hassibi, and T. Kailath, "Mixed H2/H-infinity optimal signal reconstruction in noisy filter banks," in Proceedings of IEEE ICASSP, Istanbul, Turkey, June 2000.

142. H. Vikalo, B. Hassibi, and T. Kailath, "On H-infinity optimal signal reconstruction in noisy filter banks," in Proceedings of IEEE ICASSP, Phoenix, AZ, March 1999.

143. H. Vikalo and R. S. Blum, "Distributed detection in dependent non-Gaussian noise," in Proceedings of IEEE ISIT, Ulm, Germany, June 1997.

144. H. Vikalo and R. S. Blum, "Distributed detection of known signals in Gaussian mixture noise which is dependent from sensor to sensor," in Proceedings of International Conference on Telecommunications (ICT), Melbourne, Australia, April 1997.

145. Z. Kovacic, S. Bogdan, and H. Vikalo, "Design and parameter adaptation of a fuzzy servo controller," in Proc. of the 6th Intern. Fuzzy Systems Association World Congress, Sao Paulo, Brazil, July 1995.

Books and book chapters

1. M. Shamaiah and H. Vikalo, "Estimation of Time-Varying Sparse Signals in Sensor Networks," in *Filtering from Undersampled Data with Introduction to Compressed Sensing*, Springer, 2014.

2. A. Hassibi, H. Vikalo, J. L. Riechmann, and B. Hassibi, "FRET-Based Real-Time DNA microarrays," in *Functional Genomics: Methods and Protocols*, Springer, 2012.

3. S. Das, H. Vikalo, and A. Hassibi, "Affinity-based biosensors: Stochastic modeling and figures of merit," in

Integrated Microsystems: Mechanical, Photonic, and Biological Interfaces, Taylor and Francis LLC 2011.

4. T. Kailath, H. Vikalo, and B. Hassibi, "MIMO receive algorithms," in *Space-Time Wireless Systems: From Array Processing to MIMO Communications*, Cambridge University Press, 2006.

5. B. Hassibi and H. Vikalo, "Maximum-likelihood decoding and integer least-squares: The expected complexity," in *Multiantenna Channels: Capacity, Coding and Signal Processing*, AMS 2003.

Short Bio

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