JAMES M. MURPHY

Department of Mathematics
Tufts University
Medford, MA 02155
Email: jm.murphy@tufts.edu
Website: https://jmurphy.math.tufts.edu/

SUMMARY OF RESEARCH INTERESTS

My research is at the intersection of applied harmonic analysis, data science, and image, signal, and network processing. My recent work focuses on unsupervised and semisupervised machine learning, analysis on graphs, and high-dimensional probability theory and statistics. I also design and implement fast algorithms and develop methodologies for problems in computational science, including analysis of hyperspectral images, biological networks, and molecular dynamics.

POSITIONS HELD

Tufts University — Medford, MA
Assistant Professor, Mathematics — *September 2018 - present*
Assistant Professor, Electrical and Computer Engineering (Secondary) — *December 2020 - present*
Assistant Professor, Computer Science (Secondary) — *September 2021 - present*

Johns Hopkins University — Baltimore, MD
Assistant Research Scientist & Senior Lecturer, Mathematics — *July 2016 - August 2018*

Duke University — Durham, NC
Visiting Assistant Professor, Mathematics — *August 2015 - June 2016*

NASA Goddard Space Flight Center — Greenbelt, MD
Research Intern, Software Engineering — *June 2014-July 2015*

EDUCATION

University of Maryland, College Park
M.A. in Mathematics (2013), Ph.D. in Mathematics (2015)

University of Chicago
B.S. in Mathematics (2011)

RESEARCH PUBLICATIONS

[46] M. Mueller, S. Aeron, **J.M. Murphy**, and A. Tasissa, "Geometric sparse coding in wasserstein space," *arXiv:2210.12135*, 2022.

[45] S. Bin Masud, M. Werenski, **J.M. Murphy**, and S. Aeron, "Multivariate soft rank via entropic optimal transport: Sample efficiency and generative modeling," *arXiv:2111.00043*, 2022.

[44] M. Duchin, **J.M. Murphy**, and T. Weighill, "Measuring segregation via analysis on graphs," *SIAM Journal on Matrix Analysis and Applications*, 2022*. To Appear.

[43] K. Cui, R. Li, S. Polk, **J.M. Murphy**, R. Plemmons, and R. Chan, "Unsupervised spatial-spectral hyperspectral image reconstruction and clustering with diffusion geometry," in *IEEE Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing*, 2022. To Appear.

[42] S. Polk, K. Cui, R. Plemmons, and **J.M. Murphy**, "Diffusion and volume maximization-based clustering of highly mixed hyperspectral images," *arXiv:2203.09992*, 2022.

[41] M. Werenski, R. Jiang, A. Tasissa, S. Aeron, and **J.M. Murphy**, "Measure estimation in the barycentric coding model," in *International Conference on Machine Learning*, vol. 162, pp. 23781–23803, PMLR, 2022.

[40] K. Devkota, H. Schmidt, M. Werenski, **J.M. Murphy**, M. Erden, V. Arsenescu, and L. Cowen, "GLIDER: Function prediction from GLIDE-based neighborhoods," *Bioinformatics*, vol. 38, pp. 3395–3406, 2022.

[39] S. Polk, A. Chan, K. Cui, R. Plemmons, D. Coomes, and **J.M. Murphy**, "Unsupervised detection of ash dieback disease (*Hymenoscyphus fraxineus*) using diffusion-based hyperspectral image clustering," in *IEEE International Geoscience and Remote Sensing Symposium*, pp. 2287–2290, 2022.

[38] S. Polk, K. Cui, R. Plemmons, and **J.M. Murphy**, "Active diffusion and vca-assisted image segmentation of hyperspectral images," in *IEEE International Geoscience and Remote Sensing Symposium*, 2022. 1364-1367.

[37] M. Duchin and **J.M. Murphy**, "Explainer: Measuring clustering and segregation," in *Political Geometry*, pp. 305–314, Birkhäuser, 2022*.

[36] A. Little, D. McKenzie, and **J.M. Murphy**, "Balancing geometry and density: Path distances on high-dimensional data," *SIAM Journal on Mathematics of Data Science*, vol. 4, no. 1, pp. 72–99, 2022*.

[35] **J.M. Murphy** and S. Polk, "A multiscale environment for learning by diffusion," *Applied and Computational Harmonic Analysis*, vol. 57, pp. 58–100, 2022*.

[34] J. Damjanovic, **J.M. Murphy**, and Y.-S. Lin, "CATBOSS: Cluster analysis of trajectories based on segment splitting," *Journal of Chemical Information and Modeling*, vol. 61, no. 10, pp. 5066–5081, 2021.

[33] A. Tasissa, D. Nguyen, and **J.M. Murphy**, "Deep diffusion processes for active learning of hyperspectral images," in *IEEE International Geoscience and Remote Sensing Symposium*, pp. 3665–3668, 2021.

[32] S. Polk and **J.M. Murphy**, "Multiscale clustering of hyperspectral images through spectral-spatial diffusion geometry," in *IEEE International Geoscience and Remote Sensing Symposium*, pp. 4688–4691, 2021.

[31] S. Zhang and **J.M. Murphy**, "Hyperspectral image clustering with spatially-regularized ultrametrics," *Remote Sensing*, vol. 13, no. 5, 2021.

[30] L. Cowen, K. Devkota, X. Hu, **J.M. Murphy**, and K. Wu, "Diffusion state distances: Multitemporal analysis, fast algorithms, and applications to biological networks," *SIAM Journal on Mathematics of Data Science*, vol. 3, no. 1, pp. 143–170, 2021*.

[29] P. Tankala, A. Tasissa, **J.M. Murphy**, and D. Ba, "Manifold learning and deep clustering with local dictionaries," *arXiv:2012.02134*, 2020.

[28] **J.M. Murphy**, "Patch-based diffusion learning for hyperspectral image clustering," in *IEEE International Geoscience and Remote Sensing Symposium*, pp. 1042–1045, 2020.

[27] E. Gnang and **J.M. Murphy**, "Spectral analysis for non-Hermitian matrices and directed graphs," *Linear Algebra and its Applications*, vol. 604, pp. 72 – 91, 2020*.

[26] K. Kashkooli, S. Polk, E. Hahm, **J.M. Murphy**, B. Ethridge, J. Gitlin, R. Ibala, J. Mekonnen, J. Pedemonte, H. Sun, M. Westover, R. Barbieri, O. Akeju, and S. Chamadia, "Improved tracking of sevoflurane anesthetic states with drug-specific machine learning models," *Journal of Neural Engineering*, vol. 17, no. 4, 2020.

[25] **J.M. Murphy**, "Spatially regularized active diffusion learning for high-dimensional images," *Pattern Recognition Letters*, vol. 135, pp. 213–220, 2020.

[24] K. Devkota, **J.M. Murphy**, and L. Cowen, "GLIDE: Combining local methods and diffusion state embeddings to predict missing interactions in biological networks," *Bioinformatics*, vol. 36, pp. i464–i473, 2020.

[23] A. Little, M. Maggioni, and **J.M. Murphy**, "Path-based spectral clustering: Guarantees, robustness to outliers, and fast algorithms," *Journal of Machine Learning Research*, vol. 21, no. 6, pp. 1–66, 2020*.

[22] **J.M. Murphy** and M. Maggioni, "Spectral-spatial diffusion geometry for hyperspectral image clustering," *IEEE Geoscience and Remote Sensing Letters*, vol. 17, no. 7, pp. 1243–1247, 2020.

[21] **J.M. Murphy** and M. Maggioni, "Unsupervised discriminative dimension reduction for hyperspectral chemical plume segmentation," in *IEEE International Geoscience and Remote Sensing Symposium*, pp. 3828–3831, 2019.

[20] M. Maggioni and **J.M. Murphy**, "Learning by unsupervised nonlinear diffusion," *Journal of Machine Learning Research*, vol. 20, no. 160, pp. 1–56, 2019*.

[19] Y. Liu, B. Tracey, S. Aeron, E. Miller, **J.M. Murphy**, T. Sun, and N. McDannold, "Artifact suppression for passive cavitation imaging using U-net CNNs with uncertainty quantification," in *IEEE International Conference on Signal and Image Processing*, pp. 1037–1042, 2019.

[18] S. Polk, K. Kashkooli, S. Nagaraj, S. Chamadia, **J.M. Murphy**, H. Sun, M. Westover, R. Barbieri, and O. Akeju, "Automatic detection of general anesthetic-states using ecg-derived autonomic nervous system features," in *International Conference of the IEEE Engineering in Medicine and Biology Society*, pp. 2019–2022, 2019.

[17] K. Kashkooli, S. Polk, S. Chamadia, E. Hahm, B. Ethridge, J. Gitlin, R. Ibala, J. Mekonnen, J. Pedemonte, **J.M. Murphy**, H. Sun, M. Westover, and O. Akeju, "Drug-specific models improve the performance of an eeg-based automated brain-state prediction system," in *International Conference of the IEEE Engineering in Medicine and Biology Society*, pp. 5808–5811, 2019.

[16] M. Maggioni and **J.M. Murphy**, "Learning by active nonlinear diffusion," *Foundations of Data Science*, vol. 1, no. 3, pp. 271–291, 2019*.

[15] N. Kapsin and **J.M. Murphy**, "Spatially regularized multiscale graph clustering for electron microscopy," in *SPIE Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XXV*, vol. 109860S, 2019.

[14] **J.M. Murphy** and M. Maggioni, "Unsupervised clustering and active learning of hyperspectral images with nonlinear diffusion," *IEEE Transactions on Geoscience and Remote Sensing*, vol. 57, no. 3, pp. 1829–1845, 2019.

[13] **J.M. Murphy** and M. Maggioni, "Iterative active learning with diffusion geometry for hyperspectral images," in *IEEE Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing*, pp. 1–5, 2018.

[12] W. Czaja and **J.M. Murphy** and D. Weinberg, "Single-image superresolution through directional representations," *IEEE Geoscience and Remote Sensing Letters*, no. 12, pp. 1837 – 1841, 2018*.

[11] W. Czaja, B. Manning, **J.M. Murphy**, and K. Stubbs, "Discrete directional Gabor frames," *Applied and Computational Harmonic Analysis*, vol. 45, no. 1, pp. 1–21, 2018*.

[10] **J.M. Murphy** and M. Maggioni, "Diffusion geometric methods for fusion of remotely sensed data," in *SPIE Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XXIV*, vol. 10644, p. 106440I, 2018.

[9] E. King and **J.M. Murphy**, "A theoretical guarantee for data completion via geometric separation," *Proceedings in Applied Mathematics and Mechanics*, vol. 17, pp. 833–834, 2017*.

[8] **J.M. Murphy**, O. Leija, and J. L. Moigne, "Agile multi-scale decompositions for automatic image registration," in *SPIE Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XXII*, vol. 9840, p. 984011, 2016.

[7] **J.M. Murphy**, J. L. Moigne, and D. Harding, "Automatic image registration of remotely sensed data with global shearlet features," *IEEE Transactions on Geoscience and Remote Sensing*, vol. 54, no. 3, pp. 1685–1704, 2016.

[6] W. Czaja, B. Manning, L. McLean, and **J.M. Murphy**, "Fusion of aerial gamma-ray survey and remote sensing data for a deeper understanding of radionuclide fate after radiological incidents: examples from the Fukushima Dai-Ichi response," *Journal of Radioanalytical and Nuclear Chemistry*, vol. 307, no. 3, 2016*.

[5] **J.M. Murphy** and J. L. Moigne, "Shearlet features for registration of remotely sensed multitemporal images," in *IEEE International Geoscience and Remote Sensing Symposium*, pp. 1084–1087, 2015.

[4] W. Czaja, **J.M. Murphy**, and D. Weinberg, "Superresolution of remotely sensed images with anisotropic features," in *IEEE International Conference on Sampling Theory and Applications*, pp. 317–321, 2015*.

[3] E. Bosch, W. Czaja, **J.M. Murphy**, and D. Weinberg, "Anisotropic representations for superresolution of hyperspectral data," in *SPIE Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XXI*, vol. 9472, p. 947213, 2015*.

[2] **J.M. Murphy**, *Anisotropic Harmonic Analysis and Integration of Remotely Sensed Data.* PhD thesis, University of Maryland, College Park, 2015.

[1] W. Czaja, T. Doster, and **J.M. Murphy**, "Wavelet packet mixing for image fusion and pansharpening," in *SPIE Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XX*, vol. 9088, p. 908803, 2014*.

*Authors listed alphabetically

OTHER PUBLICATIONS

[1] Murphy, J.M. "Freshman year can be free online for anyone." *The Baltimore Sun.* August 9, 2018.

SEMINAR AND CONFERENCE PRESENTATIONS

- One World Mathematics of INformation, Data, and Signals (1W-MINDS) Seminar, online. February 2023.
- AMS Sectional Meeting, Amherst, MA. October 2022.
- SIAM Conference on Mathematics of Data Science, San Diego, CA. September 2022.
- International Conference on Computational Harmonic Analysis, Ingolstadt, Germany. September 2022.
- SIAM Applied and Computational Discrete Algorithms Workshop, Aussois, France. September 2022.
- Mathematics REU Colloquium, Yale University, New Haven, CT. July 2022.
- Stochastics + Dynamics + Data Seminar, Illinois Institute of Technology, online. July 2022.
- ATD NSF Workshop, George Mason University, Arlington, VA. May 2022.
- Fields Institute Focus Program, Toronto, Canada. May 2022.
- Joint Math Meetings, online. April 2022.
- Tisch College Faculty Workshop, Tufts University, Medford, MA. February 2022.
- Data Science Seminar, University of California Santa Barbara, online. February 2022.
- Mathematics in Imaging, Data and Optimization Seminar, RPI, online. November 2021.
- Scientific Computing Seminar, Emory University, Atlanta, GA. November 2021.
- Mathematics Colloquium, University of Utah, Salt Lake City, UT. September 2021.

- Joint Statistical Meetings, online. August 2021.
- SIAM Conference on Applied and Computational Discrete Algorithms, online. July 2021.
- International Geoscience and Remote Sensing Symposium, online. July 2021.
- Applied and Computational Math Seminar, Georgia Tech, online. April 2021.
- Analysis Seminar, Clemson University, online. February 2021.
- Joint Math Meetings, online. January 2021.
- NSF ATD+AMPS Workshop, online. November 2020.
- District Fourier Talks Conference, online. October 2020.
- International Geoscience and Remote Sensing Symposium, online. September 2020.
- CRISP Seminar, Harvard University, online. August 2020.
- Mathematical Modeling Seminar, Rochester Institute of Technology, online April 2020.
- Tufts Tripods Institute Online Seminar, Tufts University, online. March 2020.
- Probability and Statistics Seminar, Boston University, Boston, MA. February 2020.
- Mathematics Colloquium, Amherst College, Amherst, MA. February 2020.
- T-Tripods Launch, Tufts University, Medford, MA. January 2020.
- Data Science Seminar, Schlumberger Doll Research, Cambridge, MA. December 2019.
- Computing at PNNL Lecture Series, Seattle, WA. November 2019.
- Machine Learning Seminar, University of Massachusetts, Lowell, MA. October 2019.
- NSF ATD+AMPS Workshop, Washington D.C. October 2019.
- INFORMS Annual Meeting, Seattle, WA, October 2019.
- Jubilee of Fourier Analysis and Applications, College Park, MD, September 2019.
- International Geoscience and Remote Sensing Symposium, Yokohama, Japan, August 2019.
- Large Scale Scientific Computing Conference, Sozopol, Bulgaria, June 2019.
- Geometric Data Analysis Conference, Chicago, IL, May 2019.
- International Conference on Approximation Theory, Nashville, TN, May 2019.
- Applied Mathematics Colloquium, MIT, Cambridge, MA, May 2019.
- Statistics Seminar, UW Madison, Madison, WI, May 2019.
- SPIE Defense+Commercial Sensing Conference, Baltimore, MD. April 2019.
- AMS Sectional Meeting, Auburn, AL. March 2019.
- Applied Mathematics Colloquium, UCLA, Los Angeles, CA. January 2019.
- Applied Mathematics Seminar, Tufts University, Medford, MA. November 2018.
- IMA Workshop: Recent Advances in Machine Learning and Computational Methods for Geoscience, Minneapolis, MN. October 2018.
- NSF ATD+AMPS Workshop, Washington D.C. October 2018.
- Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing, Amsterdam, Netherlands. September 2018.
- SPIE Defense+Security Conference, Orlando, FL. April 2018.
- Data Science Seminar, University of Tennessee, Knoxville TN, January 2018.
- Machine Learning Seminar, Naval Research Laboratory, Washington D.C. December 2017.
- Mathematics Colloquium, Tufts University, Medford, MA. December 2017.
- Mathematics Colloquium, Goucher College, Baltimore, MD. December 2017.
- Norbert Wiener Center Seminar, University of Maryland, College Park, MD. December 2017.
- Mathematics Colloquium, University of Alabama, Tuscaloosa, AL. November 2017.
- NSF/NGA Anomaly Threat Detection Workshop, Washington D.C. September 2017.

- Norbert Wiener Center Seminar, University of Maryland, College Park, MD. November 2016.
- NIH Symposium on Advanced Computational Methods in Biomedical Imaging, Bethesda, MD. October 2016.
- SPIE Defense+Security Conference, Baltimore, MD. April 2016.
- HIM Conference on Harmonic Analysis, Graphs, and Learning, Bonn, Germany. March 2016.
- Harmonic Analysis Theory and Applications Seminar, Technical University of Denmark, Copenhagen, Denmark. February 2016.
- Norbert Wiener Center Seminar, University of Maryland, College Park, MD. December 2015.
- SPIE Defense+Security Conference, Baltimore, MD. April 2015.
- CIRM Winter School Poster Session, Marseille, France. October 2014.
- Applied Math and Scientific Computing Student Seminar, University of Maryland, College Park, MD. October 2014.
- Software Engineering Division Seminar, NASA Goddard Space Flight Center, Greenbelt, MD. July 2014.
- Southeastern Analysis Meeting, Clemson, SC. March 2014.
- Internet Analysis Seminar, Georgia Tech, Atlanta, GA. August 2013.

LONG RESEARCH VISITS AND VISITING POSITIONS

- Harvard University, March-April 2022, 9 weeks.
- University of Utah, September-October 2021, 3 weeks.
- Park City Mathematics Institute, July 2016, 3 weeks.
- Hausdorff Research Institute for Mathematics, February-March 2016, 6 weeks.

GRANTS AND AWARDS

Grants:

- Tufts DISC Seed Grant, "Unsupervised Clustering for Molecular Dynamics: Internal Distance Geometry and Manifold Dictionary Learning," (PI, 2021-2022)
- Robert E. Wise, MD, Research and Education Institute, "Label-free Hyperspectral Imaging for Intra-operative Classification of Platinum-resistant Ovarian Cancer" (Co-I, 2020-2022)
- The Camille & Henry Dreyfus Foundation, "Low-supervision Machine Learning for Automated Analysis of Molecular Dynamics Simulations" (Co-PI, 2020-2023)
- NSF DMS 1924513, "ATD: Landscape Networks and Nonlinear Diffusions for Anomaly Detection and Active Learning" (PI, 2019-2022)
- NSF DMS 1912737, "Collaborative Research: Data-driven Path Metrics for Machine Learning" (PI, 2019-2022)
- Tufts Collaborates, "Decoding the Complexity of Commuting Networks in the United States," (Co-PI, 2019-2020)

Awards: Professor Joel Dean Award for Excellence in the Teaching of Mathematics (JHU, 2018); First place in Defense Science and Technology Lab Temporal Anomaly Detection Challenge (Duke, 2015); Jacob K. Goldhaber Travel Grant (UMD, 2014); Aziz/Osborn Gold Medal for Teaching (UMD, 2013); Student Marshall (top 3 % of undergraduate class) (UChicago, 2011); Graduation with general and departmental honors (UChicago, 2011); Phi Beta Kappa (UChicago, 2010).

TEACHING

Tufts University:

MATH 34 (Calculus II). Fall 2020.
MATH 123 (Math Aspects of Data Analysis). Fall 2018, Fall 2019, Spring 2023.
MATH 165 (Probability Theory). Fall 2020.
MATH 166 (Statistics). Spring 2019, Spring 2020, Spring 2021, Spring 2023.
MATH 260 (Foundations of Statistical and Machine Learning). Spring 2020.
MATH 270 (Optimal Transport: Theory and Applications). Fall 2022.

Johns Hopkins University:

MATH 106 (Calculus I for Biology and Social Sciences). Summer 2017.
MATH 202 (Calculus III). Fall 2017.
MATH 302 (ODE and PDE). Fall 2016, Summer 2018.

Duke University:

MATH 353 (ODE and PDE). Fall 2015, Summer 2016.
MATH 790 (Graduate topics course in anisotropic harmonic analysis). Fall 2015.

University of Maryland:

STAT 100 (Intro. Statistics). Fall 2011, Spring 2013, Summer 2015.
MATH 115 (Pre-Calculus). Summer 2013.
MATH 140 (Calculus I). Fall 2013.

Modern States:

College Algebra
College Mathematics
PreCalculus
Calculus

MENTORSHIP

Postdoctoral Mentor:

Abiy Tasissa, Tufts. August 2019-August 2021. First position: Assistant Professor at Tufts.

Ph.D. Student Advisor:

Brendan Mallery, Tufts, co-advised with Shuchin Aeron. January 2022- present
Matt Werenski, Tufts, co-advised with Shuchin Aeron. June 2020-present.
Marshall Mueller, Tufts, co-advised with Abiy Tasissa. September 2019-present.
Sam Polk, Tufts. September 2018-May 2022. First position: MIT Lincoln Laboratory

Masters Student Mentor:

Harrison Miller, Tufts. May 2020-May 2021. First position: Alnylam Pharmaceuticals.
Shukan Zhang, Tufts. August 2020-May 2021. First position: Huawei

Undergraduate Research Mentor:

Daniel Peng, Tufts University. September 2022-present.
Scott Fullenbaum, Tufts University. September 2022-present.
Jordan Banks, Howard University. May 2022-August 2022.
Rachel Stumpf, Tufts. May 2022-August 2022.
Nasir Wynruit, Tufts. May 2022-August 2022.
Eugene Henninger-Voss, Tufts. August 2020-May 2021. First position: Keystone Research Center.
Opemipo Boluwarin, Penn State. May 2020-March 2021. First position: Uber
Harris Hardiman-Mostow, Tufts. May 2020-May 2021. First position: Ph.D.student at UCLA.
Jonathan Conroy, Tufts. August 2019-June 2020.

Duc Nguyen, Tufts. May 2019-May 2020. First position: Ph.D. student at UMD.
Sebastian Coates, Tufts. August 2019-May 2020. First position: Microsoft.
Bhushan Suwal, Tufts. December 2018-June 2019. First position: Ph.D. student at BU.
Nathan Kapsin, JHU. May 2018-September 2018. First position: undergraduate at UChicago.
Miriam Goldman, Duke. May-July 2016. First position: Ph.D. student at UCSF.
Kevin Stubbs, UMD. March 2014-June 2015. First position: Ph.D. student at Duke.

Thesis/Candidacy Defense Committees

Shoaib bin Masud, Tufts. Ph.D. Candidacy. 2022
Casey Cavanaugh, Tufts. Ph.D. Defense. 2022
Kapil Devkota, Tufts. Ph.D. Candidacy. 2020
Joao Marcos Vensi Basso, Tufts. B.S. Thesis. 2020.
Elizabeth Newman, Tufts. Ph.D Defense. 2019.
Yue Shen, Tufts. M.A. Thesis. 2019.
Zian Jiang, Tufts. B.S. Thesis. 2019.

SERVICE

Journal Editorial Service: AIMS Foundations of Data Science

Reviewer: AISTATS, Annals of Statistics, Applied and Computational Harmonic Analysis, Bioinformatics, Biometrika, ICML, IEEE/ACM Transactions on Computational Biology and Bioinformatics, IEEE Geoscience and Remote Sensing Letters, IEEE Geoscience and Remote Sensing Magazine, IEEE Signal Processing Letters, IEEE Transactions on Geoscience and Remote Sensing, IEEE Transactions on Image Processing, ICCV, Journal of Computational Physics, Journal of Machine Learning Research, Machine Learning, Mathematical Reviews, Neural Computation, Pattern Recognition, Physica D, Remote Sensing, SIAM Journal on Applied Mathematics, SIAM Journal on Imaging Science, SIAM Journal of Mathematical Analysis, SIAM Journal on Mathematics of Data Science, SIAM Review, Signal Processing.

Conference & Seminar Organizer:

- ICERM. Co-organizer of special session "Computational Optimal Transport." May 2023.
- AMS Joint Mathematics Meeting. Co-organizer of special session "Geometry in Mathematics of Data Science". January 2023.
- AMS Sectional Meeting. Co-organizer of special session "Mathematics of Data Science". March 2022.
- International Conference on Computer Vision. Co-organizer of workshop "Topology, Algebra, and Geometry in Computer Vision". October 2021.
- Tufts Tripods Institute. Co-organizer of workshop on "Topics on Graph Algorithms and Their Applications". April-May 2021.
- International Geoscience and Remote Sensing Symposium. Co-organizer of special session "Integrating Physical Models into Machine Learning (ML) Models." September 2020.
- Tufts Tripods Online Data Science Seminar. Co-organizer. March 2020-June 2020.
- 12th International Conference on Large-Scale Scientific Computations. Organizer of special session "Large Scale Machine Learning: Multiscale Algorithms and Performance Guarantees" and member of the scientific committee. June 2019.
- Tufts University Applied Mathematics Seminar. Co-organizer. January 2019-present.
- Johns Hopkins University Data Science Seminar. Co-organizer. July 2016-August 2018.

Grant Review Panel Service: US Army Research Office; NASA; US National Science Foundation; Israeli Ministry of Innovation, Science and Technology

Other Panel Service: Science, Technology, and Society Lunch Seminar, Tufts University, November 2019; Guest Lecturer in "Data Analytics", Tufts University, October 2019; Graduate Research Excellence at Tufts (GREAT) Panel, Tufts University, June 2019; Prospective Ph.D. Student Panel, Loyola University, November 2017.

University Committee Service: Undergraduate Admissions and Financial Aid Committee, Tufts University, September 2019-May 2021; Masters in Data Analytics Steering Committee, Tufts University, May 2019-present; Graduate Committee for Mathematics Department, Tufts University, September 2018-May 2021.