Vasileios Charisopoulos

✉ vchariso@uw.edu • 🌐 vchariso.com • 🎓 Google Scholar • 🐙 Github

Research Interests

Continuous optimization, high-dimensional statistical estimation, numerical linear algebra.

Education

Cornell University   **Ithaca, NY, USA**
PhD in Operations Research & Information Engineering   *2017 – 2023*
GPA: 4.083/4.0. **Committee**: Damek Davis (chair), Anil Damle (co-chair), Austin R. Benson, Adrian Lewis
Dissertation: Computationally efficient and robust methods for large-scale optimization and scientific computing

National Technical University of Athens   **Athens, GR**
BSc & MEng, Electrical and Computer Engineering   *2010–2017*
GPA: 9.06/10 (top 5%). **Thesis advisor**: Petros Maragos

Professional Experience

Electrical & Computer Engineering, University of Washington   **Seattle**
Assistant Professor   *September 2025 – current*

University of Chicago, Data Science Institute   **Chicago**
Postdoctoral Scholar in AI & Science, *Mentor: Rebecca Willett*   *July 2023 – August 2025*

Google GCloud Infra   **Seattle (remote)**
Intern / Student Researcher, *Hosts: Carlos Villavieja & Milad Hashemi*   *May 2022 – Feb 2023*

Google Research NYC   **New York City (remote)**
Research Intern, *Hosts: Miles Lubin & David Applegate*   *June – August 2021*

INRIA Paris-Saclay - team TROPICAL   **Paris, FR**
Researcher, *Hosts: Stephane Gaubert & Xavier Allamigeon*   *May 2017 – August 2017*

NCSR Demokritos   **Athens, GR**
Research intern, *Host: George Giannakopoulos*   *September – December 2015*

Honors and Awards

2024 ISyE Junior Researcher Workshop   **2024**
Georgia Tech Industrial & Systems Engineering (ISyE)
A workshop for PhD students and postdocs interested preparing for academic careers.

Rising Star in Computational and Data Sciences   **2023**
University of Texas at Austin, Oden Institute
A workshop for graduate students and postdocs interested in academic and research careers.

Outstanding Teaching Assistant Award   **2023**
Cornell ORIE
Awarded for the 2022 – 2023 academic year.

Cornelia Ye Outstanding Teaching Assistant Award   **2021**
Cornell Center for Teaching Innovation
University-wide teaching award, given to one domestic and one international teaching assistant per year.

Andreas G. Leventis Scholarship   **2020**
Andreas G. Leventis Foundation
Research scholarship awarded to PhD students & postdocs of Greek descent.

Schloss-Dagstuhl Support Grant for Junior Researchers   **2018**
National Science Foundation Award #1257011

Cornell University Fellowship   **2017**
School of Operations Research & Information Engineering
Fellowship covering 1 year of PhD studies.

Publications

Preprints

[1] V. Charisopoulos, A. R. Benson, and A. Damle. *Incrementally Updated Spectral Embeddings*. 2019. arXiv: `1909.01188 [math.NA]`.

[2] V. Charisopoulos and P. Maragos. *A Tropical Approach to Neural Networks with Piecewise Linear Activations*. 2018. arXiv: `1805.08749 [stat.ML]`.

[3] A. DePavia, V. Charisopoulos, and R. Willett. *Faster Adaptive Optimization via Expected Gradient Outer Product Reparameterization*. 2025. arXiv: `2502.01594 [cs.LG]`.

[4] H. Laus et al. *Solving Inverse Problems with Deep Linear Neural Networks: Global Convergence Guarantees for Gradient Descent with Weight Decay*. 2025. arXiv: `2502.15522 [cs.LG]`.

[5] M. Yousef et al. "Collective Microbial Effects Drive Toxin Bioremediation and Enable Rational Design". In: *bioRxiv* (2025). DOI: `10.1101/2025.03.28.645802`.

[6] A. DePavia, V. Charisopoulos, and R. Willett. *How do simple rotations affect the implicit bias of Adam?* 2025. arXiv: `2510.23804 [cs.LG]`.

Journal publications

[7] V. Charisopoulos and R. Willett. "Nonlinear tomographic reconstruction via nonsmooth optimization". In: *SIAM Journal on Mathematics of Data Science* 7 (5 2025). DOI: `10.1137/24M1678982`. eprint: `arXiv:2407.12984`.

[8] O. Melia et al. "Multi-frequency progressive refinement for learned inverse scattering". In: *Journal of Computational Physics* 527 (2025), p. 113809. ISSN: 0021-9991. DOI: `10.1016/j.jcp.2025.113809`.

[9] D. Davis, D. Drusvyatskiy, and V. Charisopoulos. "Stochastic algorithms with geometric step decay converge linearly on sharp functions". In: *Mathematical Programming* (Sept. 2023). DOI: `10.1007/s10107-023-02003-w`.

[10] V. Charisopoulos and D. Davis. "A Superlinearly Convergent Subgradient Method for Sharp Semismooth Problems". In: *Mathematics of Operations Research* (Aug. 2023). DOI: `10.1287/moor.2023.1390`.

[11] V. Charisopoulos, A. R. Benson, and A. Damle. "Communication-Efficient Distributed Eigenspace Estimation". In: *SIAM Journal on Mathematics of Data Science* 3.4 (2021), pp. 1067–1092. DOI: `10.1137/20M1364862`.

[12] P. Maragos, V. Charisopoulos, and E. Theodosis. "Tropical Geometry and Machine Learning". In: *Proceedings of the IEEE* 109.5 (2021), pp. 728–755. DOI: `10.1109/JPROC.2021.3065238`.

[13] V. Charisopoulos et al. "Low-Rank Matrix Recovery with Composite Optimization: Good Conditioning and Rapid Convergence". In: *Foundations of Computational Mathematics* 21.6 (2021), pp. 1505–1593. DOI: `10.1007/s10208-020-09490-9`.

[14] V. Charisopoulos, D. Davis, M. Díaz, and D. Drusvyatskiy. "Composite optimization for robust rank one bilinear sensing". In: *Information and Inference: A Journal of the IMA* 10.2 (2021), pp. 333–396. DOI: `10.1093/imaiai/iaaa027`.

[15] A. Nikas et al. "Managing stakeholder knowledge for the evaluation of innovation systems in the face of climate change". In: *Journal of Knowledge Management* 21.5 (2017), pp. 1013–1034.

Conference publications

[16] P. Alexeenko and V. Charisopoulos. "Reducing Aggregate Electric Vehicle Battery Capacity through Sharing". In: *2023 IEEE 62nd Conference on Decision and Control*. IEEE. 2023. arXiv: `2304.10461 [eess.SY]`.

[17] V. Charisopoulos, H. Esfandiari, and V. Mirrokni. "Robust and private stochastic linear bandits". In: *Proceedings of the 40th International Conference on Machine Learning*. Ed. by A. Krause et al. Vol. 202. Proceedings of Machine Learning Research. PMLR, 23–29 Jul 2023, pp. 4096–4115. URL: `https://proceedings.mlr.press/v202/charisopoulos23a.html`.

[18] V. Charisopoulos and A. Damle. "Communication-efficient distributed eigenspace estimation with arbitrary node failures". In: *Advances in Neural Information Processing Systems*. Ed. by S. Koyejo et al. Vol. 35. Curran Associates, Inc., 2022, pp. 18197–18210.

[19] V. Charisopoulos, A. R. Benson, and A. Damle. "Entrywise convergence of iterative methods for eigenproblems". In: *Advances in Neural Information Processing Systems*. Ed. by H. Larochelle et al. Vol. 33. Curran Associates, Inc., 2020, pp. 5644–5655.

[20] V. Charisopoulos and P. Maragos. "Morphological perceptrons: geometry and training algorithms". In: *International Symposium on Mathematical Morphology and Its Applications to Signal and Image Processing*. Springer. 2017, pp. 3–15.

Talks and Presentations

Nonlinear tomographic reconstruction via nonsmooth optimization

- *NeurIPS OPT Workshop*	*December 2024*
- *BASP Frontiers Conference*	*January 2025*
- *NITMB Research-in-progress Seminar*	*April 2025*
- *International Conference on Continuous Optimization (ICCOPT)*	*July 2025*

A superlinearly convergent subgradient method for sharp semismooth problems

- INFORMS Optimization Society Conference	*March 2022*
- Cornell Scientific Computing & Numerics Seminar	*April 2022*
- International Conference on Continuous Optimization (ICCOPT)	*July 2022*
- INFORMS Annual Meeting	*October 2022*
- MIT Sloan (OR & Statistics Seminar)	*January 2023*
- UC Berkeley IEOR Seminar	*February 2023*
- SIAM OP23	*May 2023*
- INFORMS Annual Meeting	*October 2023*
- INFORMS Optimization Society Conference	*March 2024*
- INFORMS Annual Meeting	*October 2024*
- SIAM MDS 2024	*October 2024*

Communication-efficient distributed eigenspace estimation

- SIAM Annual Meeting	*July 2022*
- Cornell Scentific Computing & Numerics Seminar	*November 2022*
- NeurIPS 2022	*November 2022*

Entrywise convergence of iterative methods for eigenproblems

- Cornell Scientific Computing & Numerics Seminar	*February 2020*
- NeurIPS 2020	*December 2020*

Incrementally Updated Spectral Embeddings

- ATD - AMPS NSF meeting	*October 2019*

A Tropical Approach to Neural Networks with Piecewise Linear Activations.

- SIAM Conference on Applied Algebraic Geometry	*July 2019*
- Shape Analysis: Euclidean, Discrete and Algebraic Geometric Methods (Dagstuhl seminar #18422)	*October 2018*

Advising

PhD students

Jingxing (Jesse) Wang (UW ECE, coadvised with Maryam Fazel)	*2025 – now*
Jiayi Yao (UW ECE)	*2025 – now*

Service

Reviewing

Mathematical Programming, SIAM Journal on Optimization, JMLR, IEEE TNNLS, NeurIPS, ICML

Diversity & Outreach

Catalyst Program (Cornell Diversity Programs in Engineering)	*2022*
Cornell Graduate School STEM Preview day	*2020, 2021*
Cornell ORIE PhD application support for underrepresented students	*2020 – 2022*
Cornell Prison Education Program	*2019 – 20*

Teaching Experience

EE 344 – Data-driven Modeling and Machine Learning	**Fall 2025**
Junior Level	*Instructor*
Data Science Clinic (at UChicago)	**Fall 2023 & Winter 2024**
Undergrad & Master's level	*Faculty Mentor*
ORIE 6300 – Mathematical Programming	**Fall 2022, 2021, 2018**
PhD level, Instructors: Katya Scheinberg (2021, 2022), Jim Renegar (2018) - Size: 35	*Teaching assistant*
ORIE 5270/6125 – Big Data Technologies	**Spring 2023**
MEng & PhD level, Size: 120	*Teaching assistant*
ORIE 5270/6125 – Big Data Technologies	**Spring 2022, 2021**
MEng & PhD level, Size: 120	*Instructor*
ORIE 4740 – Introduction to Statistical Data Mining	**Spring 2020**
Senior level, Instructor: Damek Davis - Size: 140	*Lead teaching assistant*
ORIE 3310 – Optimization II	**Spring 2019**
Junior level, Instructor: David Williamson - Section Size: 40	*Teaching assistant*
ORIE 3300 – Optimization I	**Fall 2020**
Junior level, Instructor: Damek Davis - Size: 150	*Lead teaching assistant*
MATH 112 – Contemporary Mathematics	**Fall 2019**
Intro level, Cornell Prison Education Program	*Instructor*