

Vasileios Charisopoulos

PhD Student in Operations Research, Cornell University

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VHarisop



EDUCATION

Ph.D. in Operations Research

Cornell University

Sept. 2017 – present

Advisor: Prof. Damek Davis

GPA: 4.087 / 4.0

Minors: Mathematics, Computer Science

BSc. & MEng. in ECE

National Technical University of Athens

Oct. 2010 – April 2017

Advisor: Prof. Petros Maragos

GPA: 9.06 / 10 (top 5%)

EXPERIENCE

PhD Researcher

Cornell University

Aug. 2017 – Present

- My research is broadly focused on the mathematics of data science, including nonsmooth & nonconvex optimization under statistical assumptions and large-scale numerical linear algebra.
- I have solid background in high-dimensional probability & statistics, numerical analysis, optimization theory and algorithms.

Research Intern

Google Research NYC

June 2021 – Aug. 2021

- Worked on a matrix-free solver for quadratic programs. Contributed theory and code that was integrated into the Google C++ codebase.
- Hosted by Miles Lubin & David Applegate.

Research Intern

INRIA Paris-Saclay

April 2017 – Aug. 2017

- Worked on the formalization of convex polyhedra in the Coq proof assistant.
- Hosted by Stephane Gaubert & Xavier Allami-geon.

SKILLS

Programming: Python Julia Java C / C++ Bash

Misc: OpenMP L^AT_EX git

Languages: English •Greek (native) •Russian (elementary)

PUBLICATIONS

Peer-Reviewed

- Charisopoulos, Vasileios, Austin R. Benson, and Anil Damle (2021). “Communication-efficient distributed eigenspace estimation”. In: *SIAM Journal on Mathematics of Data Science (to appear)*.
- Charisopoulos, Vasileios, Yudong Chen, et al. (2021). “Low-rank matrix recovery with composite optimization: good conditioning and rapid convergence”. In: *Foundations of Computational Mathematics*. DOI: 10.1007/s10208-020-09490-9.
- Maragos, Petros, Vasileios Charisopoulos, and Emmanouil Theodosis (2021). “Tropical geometry and machine learning”. In: *Proceedings of the IEEE* 109.5, pp. 728–755.
- Charisopoulos, Vasileios, Austin R Benson, and Anil Damle (2020). “Entrywise convergence of iterative methods for eigenproblems”. In: *Advances in Neural Information Processing Systems*. Vol. 33, pp. 5644–5655.
- Charisopoulos, Vasileios, Damek Davis, et al. (2020). “Composite optimization for robust rank one bilinear sensing”. In: *Information and Inference: A Journal of the IMA*. DOI: 10.1093/imaiai/iaaa027.
- Charisopoulos, Vasileios and Petros Maragos (2017). “Morphological Perceptrons: Geometry and Training Algorithms”. In: *Mathematical Morphology and Its Applications to Signal and Image Processing*, pp. 3–15.

Submitted

- Charisopoulos, Vasileios, Austin R. Benson, and Anil Damle (2019). *Incrementally Updated Spectral Embeddings*. arXiv: 1909.01188.
- Charisopoulos, Vasileios and Petros Maragos (2019). *A Tropical Approach to Neural Networks with Piecewise Linear Activations*. arXiv: 1805.08749.
- Davis, Damek, Dmitriy Drusvyatskiy, and Vasileios Charisopoulos (2019). *Stochastic algorithms with geometric step decay converge linearly on sharp functions*. arXiv: 1907.09547.




TALKS

- Cornell Scientific Computing & Numerics Seminar (Feb. 2020)
- NSF ATD / AMPS Joint Meeting (Oct. 2019)
- SIAM Conf. on Applied Algebraic Geometry (July 2019)
- Schloss-Dagstuhl Seminar on Discrete, Euclidean & Algebraic-Geometric methods for Shape Analysis (Oct. 2018)

TEACHING

- **Fall 2021, 2018:** ORIE 6300 – Mathematical Programming (TA, PhD level)
- **Spring 2021:** ORIE 5270/6125 – Big Data Technologies (Instructor)
- **Fall 2020:** ORIE 3300 – Optimization I (Lead TA)
- **Spring 2020:** ORIE 4740 – Statistical Data Mining (Lead TA)
- **Fall 2019:** MATH 112 – Contemporary Mathematics (Instructor – Cornell Prison Education Program)
- **Spring 2019:** ORIE 3310 – Optimization II (TA)

AWARDS

-  **Cornelia Ye Outstanding Teaching Assistant Award (2020 – 2021)**
Awarded to 1 domestic and 1 international teaching assistant per academic year.
-  **Andreas G. Leventis Foundation Scholarship**
Merit-based scholarship targeted to students of Greek descent. Awarded for 2020 – 2021 acad. year.
-  **Schloss-Dagstuhl Support Grant for Junior Researchers**
NSF travel support grant #1257011.

REFERENCES

Prof. Damek Davis – dsd95@cornell.edu
@ Cornell University, ORIE (Thesis advisor)

Prof. Anil Damle – damle@cornell.edu
@ Cornell University, Computer Science

Prof. Austin Benson – arb@cs.cornell.edu
@ Cornell University, Computer Science

Miles Lubin – mlubin@google.com
@ Google Research NYC

Prof. Xavier Allamigeon – xavier.allamigeon@inria.fr
@ INRIA Paris-Saclay & Ecole Polytechnique

Prof. Petros Maragos – maragos@cs.ntua.gr
@ National Technical University of Athens, ECE