FOTIOS ILIOPOULOS

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CURRENT POSITION

Senior Research Scientist, Google — May 2024 - present
Research Scientist, Google — September 2021 - May 2024

PREVIOUS POSITIONS

Postdoctoral Scholar, Institute for Advanced Study and Princeton University — Sep. 2019 - August 2021

EDUCATION

University of California Berkeley, USA — Sep. 2014 - August 2019
Doctor of Philosophy (PhD) in Computer Science
Advisor: Professor Alistair Sinclair

National Technical University of Athens (NTUA), Greece — Sep. 2008 - Sept. 2013
Diploma (5y) in Electrical and Computer Engineering

RESEARCH INTERESTS

- **Theory**: Algorithms and Probability, Machine Learning
- **Applications**: Efficient Deep Learning, MCMC algorithms for Local Search, Inference and Sampling

PUBLICATIONS

1. "SLaM: Student-Label Mixing for Distillation with Unlabeled Examples" (with V. Kontonis, C. Baykal, K. Trihn, G. Menghani and E. Vee). *Proceedings of the 37th Conference on Neural Information Processing (NeurIPS)*, Nov. 2023.
2. "Robust Active Distillation (with C. Baykal, K. Trihn, G. Menghani and E. Vee)." *Proceedings of the 11th Conference on Learning Representations (ICLR)*, May 2023.
3. "Weighted distillation with unlabeled examples" (with V. Kontonis, C. Baykal, K. Trihn, G. Menghani and E. Vee). *Proceedings of the 36th Conference on Neural Information Processing (NeurIPS)*, Nov. 2022.
4. "Improved bounds for coloring locally sparse hypergraphs". *Proceedings of Approximation, Randomization, and Combinatorial Optimization (APPROX/RANDOM)*, August 2021, pp. 39:1-39:16.
5. "A new notion of commutativity for the algorithmic Lovász Local Lemma" (with D. G. Harris and V. Kolmogorov). *Proceedings of Approximation, Randomization, and Combinatorial Optimization (APPROX/RANDOM)*, August 2021, pp. 31:1-31:25.
6. "Group testing and local search: Is there a computational-statistical gap?" (with I. Zadik). *Proceedings of the 34th Annual Conference on Learning Theory (COLT)*, August 2021, pp. 2499-2551.
7. "Simple local computation algorithms for the Lovász Local Lemma" (with D. Achlioptas and T. Gouleakis). *Proceedings of the 32nd ACM Symposium on Parallelism in Algorithms and Architectures (SPAA)*, July 2020, pp. 1-10.
8. "Efficiently list-edge coloring multigraphs asymptotically optimally" (with A. Sinclair). *Random Stuctures & Algorithms, Volume 61, pp. 724-753, 2022. A preliminary version appeared in the proceedings of the 31st ACM-SIAM Symposium on Discrete Algorithms (SODA)*, January 2020, pp. 2319-2336.
9. "Beyond the Lovász Local Lemma: Point to set correlations and their algorithmic applications", (with D. Achlioptas and A. Sinclair). *Proceedings of the 60th IEEE Symposium on Foundations of Computer Science (FOCS)*, November 2019, pp. 725-744.
10. "A local lemma for focused stochastic algorithms" (with D. Achlioptas and V. Kolmogorov). *SIAM Journal on Computing (SICOMP), Volume 48(5):1583-602; 2019.*

11. "Commutative algorithms approximate the LLL-distribution". *Proceedings of Approximation, Randomization, and Combinatorial Optimization (APPROX/RANDOM)*, August 2018, pp. 44:1 - 44:20.
12. "Stochastic control via entropy compression" (with D. Achlioptas and N. Vlassis). *Proceedings of the 44th International Colloquium on Automata, Language and Programming (ICALP)*, July 2017, pp. 83:1 - 83:13.
13. "Focused stochastic local search and the Lovász Local Lemma" (with D. Achlioptas). *Proceedings of the 27th ACM-SIAM Symposium on Discrete Algorithms (SODA)*, January 2016, pp. 2024-2038.
14. "Random Walks that Find Perfect Objects and the Lovász Local Lemma" (with D. Achlioptas). *Journal of the ACM (J. ACM), Volume 63(3): 22:1-22:29; 2016. A preliminary version appeared in the proceedings of the 55th IEEE Annual Symposium on Foundations of Computer Science (FOCS)*, November 2014, pp. 494-503.

AWARDS

Christos Papakyriakopoulos award
For excellence in Mathematics in the school of Electrical and Computer Engineering for 2008-2009 (GPA 10/10) — December 2014

Nikos Kritikos Award
For excellence in Mathematics in the school of Electrical and Computer Engineering for 2008-2010 (GPA 10/10) — December 2011

Bronze Medal — March 2010
Southeastern European Mathematical Olympiad for University Students
Member of the Greek National Team

Silver Medal — February 2008
Greek National Mathematical Olympiad

3rd Prize — January 2008
68 Panhellenic Contest in Mathematics

TALKS

T1. "Solving locally sparse CSPs up to the algorithmic barrier threshold" *(TOCA-SV colloquium, May 2022)*

T2. "Improved bounds for coloring locally sparse hypergraphs"' *(Conference Talk at Approximation, Randomization and Combinatorial Optimization, August 2021)*

T3. "A new notion of commutativity for the algorithmic Lovász Local Lemma" *(Conference Talk at Approximation, Randomization and Combinatorial Optimization, August 2021)*

T4. "Design and Analysis of Stochastic Local Search Algorithms" *(Invited talk, Theory Seminar of the University of California Santa Cruz, March 2021)*

T5. "Design and Analysis of Stochastic Local Search Algorithms" *(Invited talk, Google Research, March 2021)*

T6. "Efficiently list-edge coloring multigraphs asymptotically optimally'. *(Invited talk, Theory Seminar of the University of California San Diego, February 2021)*

T7. "Algorithmic aspects of the Lovász Local Lemma". *(Invited talk, Birmingham Combinatorics Seminar, October 2020)*

T8. "Stochastic local search and the Lovász Local Lemma". *(Invited talk, TCS+ online seminars in theoretical computer science, September 2020)*

T9. "Girth-reducibility and the algorithmic barrier for coloring". *(Invited Talk, Theory Seminar of National Technical University of Athens, June 2020)*

T10. "Girth-reducibility and the algorithmic barrier for coloring". *(Invited Talk, Theory Seminar of CU Boulder, April 2020)*

T11. "Stochastic local search and the Lovász Local Lemma". *(Invited Talk, Theory Seminar of Rutgers University, March 2020)*

T12. "Stochastic local search for constraint satisfaction problems". *(Invited Talk, Simons Algorithms and Geometry meeting, New York, January 2020)*

T13. "Efficiently list-edge coloring multigraphs asymptotically optimally". *(Conference Talk at the 31st ACM-SIAM Symposium on Discrete Algorithms, January 2020)*

T14. "Constraint satisfaction problems and probabilistic combinatorics I &II". *(Institute for Advanced Study, Computer Science/Discrete Mathematics Seminar, November 2019)*

T15. "Beyond the Lovász Local Lemma: Point to Set Correlations and Their Algorithmic Applications". *(Conference Talk at the 60th IEEE Symposium on Foundations of Computer Science, November 2019)*

T16. "Stochastic local search and the Lovász Local Lemma". *(Invited Talk, Theory Seminar of New York University, October 2019)*

T17. "Finding global optima via local search and the Lovász Local Lemma". *(Invited talk, Graduation Day Information Theory and Applications workshop, February 2019)*

T18. "Commutative algorithms approximate the LLL-distribution". *(Conference Talk at Approximation, Randomization and Combinatorial Optimization, August 2018)*

T19. "A new perspective on stochastic local search and the Lovász Local Lemma". *(Invited Talk, Stanford University Theory Lunch, May 2018)*

T20. "Stochastic local search and the Lovász Local Lemma". *(Invited Talk, 6th biennial Canadian Discrete and Algorithmic Mathematics Conference, June 2017)*

T21. "Stochastic control via entropy compression". *(Conference Talk at the 44th International Colloquium on Automata, Language and Programming, July 2017)*

T22. "Focused stochastic search and the Lovász Local Lemma". *(Conference Talk at the 27th ACM-SIAM Symposium on Discrete Algorithms, January 2016)*

T23. "Finding global optima by randomized local search". *(Invited Talk, at the 22nd International Symposium on Mathematical Programming, July 2015)*

T24. "Random walks that find perfect objects and the Lovász Local Lemma". *(Invited Talk, Bellairs Workshop on Comb. Optimization 2015)*

SERVICE

- I have served as reviewer for the Journal of the ACM, the SIAM Journal on Computing, Random Structures & Algorithms, ACM Transactions on Algorithms, Theoretical Computer Science, the Journal of Machine Learning Research, the IEEE Symposium on Foundations of Computer Science (FOCS), the ACM Symposium on Theory of Computing (STOC), the ACM-SIAM Symposium on Discrete Algorithms (SODA), the Conference on Neural Information Processing Systems (NeurIPS), the International Conference on Randomization and Computation (RANDOM), the International Colloquium on Automata, Language and Programming (ICALP), the IEEE International Symposium on Information Theory (ISIT).
- I served in the Program Committee of RANDOM 2022.

TEACHING EXPERIENCE

Teaching Assistant

- CS170: *Efficient Algorithms and Intractable Problems, UC Berkeley* (Spring 2019)
- CS70: *Discrete Mathematics and Probability Theory, UC Berkeley* (Spring 2018)
- CS174: *Combinatorics and Discrete Probability, UC Berkeley* (Spring 2017)
- *Discrete Mathematics for Computer Science, National Technical University of Athens* (Spring 2011)

INTERNSHIPS

Data Science Research Intern in Adobe Systems Ltc
Summer 2016, Supervisor: Nikos Vlassis
Research Assistant at CTI Diofantos
September 2013-August 2014, Supervisor: Dimitris Achlioptas

PROGRAMMING

- Programming: Python, Tensorflow, C++, C, SQL