Tal Amir, Ph.D.

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Profile

I am a postdoctoral researcher at the Faculty of Mathematics at the Technion Institute of Technology, working in the lab of Nadav Dym. My research involves topics in machine learning, optimization and computer vision. Currently I am focusing on deep-learning methods for data that is invariant to symmetries, such as point clouds, sets and graphs. My work includes both theoretical and and practical aspects, and I have 10+ years of experience in designing, implementing and evaluating machine-learning algorithms.

Ph.D. in Computer Science & Applied Mathematics Advisor: Prof. Boaz Nadler	Weizmann Institute of Science, Rehovot, Israel	Courses: 95	2020
M.Sc. in Computer Science & Applied Mathematics Advisor: Prof. Ronen Basri	Weizmann Institute of Science, Rehovot, Israel	Courses: 94.1 Thesis: 93	2015
B.Sc. in Computer Science & Mathematics Summa cum laude	Technion Institute of Technology, Haifa, Israel	95	2012

Experience

- **Faculty of Mathematics** — *Winter 2021 - Present*
  Postdoctoral research — Technion Institute of Technology
- **Statistical Inference course** — *Spring 2021*
  Teaching Assistant — Weizmann Institute of Science
- **Advanced Topics in Computer Vision course** — *Spring 2015*
  Teaching Assistant — Weizmann Institute of Science
- **Introduction to Computer Vision course** — *Winter 2013-2014*
  Teaching Assistant — Weizmann Institute of Science
- **Combinatorics for Computer Science course** — *Spring 2008, Winter 2008-2009*
  Teaching Assistant — Technion Institute of Technology
- **Essence Group** — *2007-2008*
  Software Engineer — Herzliya, Israel
- **Essence Group** — *2005*
  Quality Assurance Engineer — Herzliya, Israel

Publications

- Tal Amir and Nadav Dym. "Injective Sliced-Wasserstein embedding for weighted sets and point clouds." *arXiv preprint arXiv:2405.16519* (2024).
- Snir Hordan, Tal Amir, and Nadav Dym. "Weisfeiler Leman for Euclidean Equivariant Machine Learning." To appear in *International Conference on Machine Learning* (2024).
- Snir Hordan, Tal Amir, Steven J. Gortler, and Nadav Dym. "Complete Neural Networks for Euclidean Graphs." *Proceedings of the AAAI Conference on Artificial Intelligence, 38(11), 12482-12490. https://doi.org/10.1609/aaai.v38i11.29141* (2024).
- Tal Amir, Steven Gortler, Ilai Avni, Ravina Ravina, Nadav Dym. "Neural injective functions for multisets, measures and graphs via a finite witness theorem." Spotlight paper, *Advances in Neural Information Processing Systems 36* (2023).
- Tal Amir, Shahar Kovalsky and Nadav Dym. "Symmetrized Robust Procrustes: Constant-Factor Approximation and Exact Recovery." *arXiv preprint arXiv:2207.08592* (2022).
- Tal Amir, Ronen Basri, and Boaz Nadler. "The trimmed lasso: Sparse recovery guarantees and practical optimization by the generalized soft-min penalty." *SIAM Journal on Mathematics of Data Science* 3.3 (2021): 900-929.
- Soumyadip Sengupta, Tal Amir, Meirav Galun, Tom Goldstein, David W. Jacobs, Amit Singer, and Ronen Basri. "A new rank constraint on multi-view fundamental matrices, and its application to camera location recovery." *Proceedings of the IEEE conference on computer vision and pattern recognition.* 2017.

- Meirav Galun, Tal Amir, Tal Hassner, Ronen Basri, and Yaron Lipman. "Wide baseline stereo matching with convex bounded distortion constraints." *Proceedings of the IEEE International Conference on Computer Vision. 2015.*
- Du Toit G, Katz Y, Sasieni P, Mesher D, Maleki SJ, Fisher HR, Fox AT, Turcanu V, Amir T, Zadik-Mnuhin G, Cohen A. "Early consumption of peanuts in infancy is associated with a low prevalence of peanut allergy." *Journal of Allergy and Clinical Immunology.* 2008 Nov 1;122(5):984-91.