Haggai Maron

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Summary

I am a Research Scientist at NVIDIA Research. My main fields of interest are machine learning, optimization, and shape analysis. More specifically, I am working on applying deep learning to irregular domains (e.g., graphs, sets, point clouds, and surfaces) and graph/shape matching problems. My research received several awards, including the *best paper award in ICML 2020*, the world's premier conference in machine learning**.** I completed my Ph.D. in 2019 at the Department of Computer Science and Applied Mathematics at the Weizmann Institute of Science under the supervision of Prof. Yaron Lipman**.**

Academic positions

2019-	**Research Scientist** at NVIDIA Research.

Education

2015-2019	**Ph.D.**, **Computer Science and Mathematics**, Weizmann Institute of Science. Thesis title: Deep and Convex Shape Analysis. Supervisor: Prof. Yaron Lipman.
2012-2014	**MSc, Computer Science and Mathematics** at the Computer Vision Lab, Weizmann Institute of Science. Final grade: 97/100.
2008-2011	**BSc, Computer Science and Mathematics**, The Hebrew University of Jerusalem. GPA: 96/100.

Honors and awards

2020	ICML 2020 Outstanding Paper award
2020	The The Giora Yoel Yashinski Memorial Prize for outstanding students for accomplishments during my Ph.D at the Feinberg Graduate School.
2019	Participant in the SIGGRAPH 2019 Doctoral Consortium.
2015	Recipient of the Feinberg Graduate School dean prize in recognition of academic excellence and scientific accomplishments.
2012	BSc awarded magna cum laude.

Teaching

2019 (spring) Geometric and Algebraic Methods in Deep Learning (WIS)

2018 (winter) Geometry and Deep Learning (WIS)

Reviewer

I serve as a reviewer for NeurIPS, ICML, ICLR, ICCV, SIGGRAPH, ACM TOG, Machine Learning and JMLR.

Programming experience

2017-2019 Deep learning algorithm developer at Photomyne Ltd.

2015-2017 Deep learning algorithm developer at Fifth Dimension Ltd.

2010-2012 Real-time Software developer at NDS Group Ltd.

Preprints

[1] Position-Agnostic Multi-Microphone Speech Dereverberation. Yemini Y., Fetaya E., Maron H., Gannot S., *Submitted*, 2020

[2] On Size Generalization in Graph Neural Networks. Yehudai G., Fetaya E., Meirom E, Chechik G., Maron H., *Submitted*, 2020

[3] On the Universality of Rotation Equivariant Point Cloud Networks. Dym N., Maron H., *Submitted*, 2020

[4] How to Stop Epidemics: Controlling Graph Dynamics with Reinforcement Learning and Graph Neural Networks. Meirom E., Maron H., Mannor S., Chechik G. *Submitted*, 2020

[5] Auxiliary Learning by Implicit Differentiation. Navon A.*, Achituve I.*, Maron H., Chechik G.**, Fetaya E.** (* equal contribution), *Submitted, 2020.*

[6] Self-Supervised Learning for Domain Adaptation on Point-Clouds. Achituve I., Maron H., & Chechik G. *Submitted, 2020.*

Publications

[1] Set2Graph: Learning Graphs from Sets. Serviansky H., Segol N., Shlomi J., Cranmer K., Gross E., Maron H., & Lipman Y. *Neural Information Processing Systems (NeurIPS), 2020.*

[2] On Learning Sets of Symmetric Elements. Maron H., Litany O., Chechik G., & Fetaya E. *International Conference on Machine Learning (ICML) 2020. (Outstanding paper award).*

[3] Learning Algebraic Multigrid Using Graph Neural Networks. Luz I, Galun M., Maron H., Basri R., & Yavneh I. *International Conference on Machine Learning (ICML) 2020.*

[4] Approximation Power of Invariant Graph Networks. Maron H., Ben-Hamu H., & Lipman Y. *NeurIPS 2019 Graph Representation Learning Workshop.*

[5] Provably Powerful Graph Networks. Maron H.*, Ben-Hamu H.*, Serviansky H.*, & Lipman Y. (*equal contribution) *Neural Information Processing Systems (NeurIPS) 2019.*

[6] Controlling Neural Level Sets. Atzmon M., Haim N., Yariv L., Israelov O., Maron H., & Lipman Y. *Neural Information Processing Systems (NeurIPS) 2019.*

[7] On the Universality of Invariant Networks. Maron H., Fetaya E., Segol N. & Lipman Y. *International Conference on Machine Learning (ICML) 2019.*

[8] Surface Networks via General Covers. Haim N., Segol N., Ben-Hamu H., Maron H. & Lipman Y. *International conference on computer vision (ICCV) 2019.*

[9] Invariant and Equivariant Graph Networks. Maron H., Ben-Hamu H., Shamir N., & Lipman Y. *International Conference on Learning Representations (ICLR) 2019.*

[10] Sinkhorn Algorithm for Lifted Assignment Problems. Kushinsky, Y., Maron, H., Dym, N., & Lipman Y. *2019, SIAM Journal on Imaging Sciences.*

[11] (Probably) Concave Graph Matching. Maron H. & Lipman Y. *Neural Information Processing Systems (NeurIPS) 2018, Spotlight presentation*

[12] Multi-chart Generative Surface Modeling. Ben-Hamu, H., Maron, H., Kezurer, I., & Lipman, Y. *ACM SIGGRAPH Asia 2018*.

[13] Point Convolutional Neural Networks by Extension Operators. Atzmon, M.*, Maron, H.*, & Lipman, Y. (*Equal contribution) *ACM SIGGRAPH 2018*.

[14] DS++: A Flexible, Scalable and Provably Tight Relaxation for Matching Problems. Dym, N.*, Maron, H.*, & Lipman, Y. (*Equal contribution) *ACM SIGGRAPH Asia 2017.*

[15] Convolutional Neural Networks on Surfaces via Seamless Toric Covers. Maron, H., Galun, M., Aigerman, N., Trope, M., Dym, N., Yumer, E., & Lipman, Y. *ACM SIGGRAPH 2017.*

[16] Point Registration via Efficient Convex Relaxation. Maron, H., Dym, N., Kezurer, I., Kovalsky, S., & Lipman, Y. *ACM SIGGRAPH 2016.*

[17] Passive Light and Viewpoint Sensitive Display of 3D Content. Levin, A., Maron, H., & Yarom, M. *IEEE International Conference on Computational Photography (ICCP) 2016.*