Haggai Maron

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Summary

I am a Research Scientist at NVIDIA Research. My main fields of interest are machine learning and its application to graph and shape analysis. My current research applies deep learning to irregular and structured domains (e.g., graphs, sets, point clouds, and surfaces), a field of study known as Geometric Deep Learning. My research has received several awards, including the best paper award at ICML 2020, the premier conference in machine learning. I completed my Ph.D. at the Department of Computer Science and Applied Mathematics at the Weizmann Institute of Science in 2019 under the guidance of Prof. Yaron Lipman. I will join the Faculty of Electrical and Computer Engineering at the Technion as an Assistant Professor in 2023.

Academic positions

2019-	**Research Scientist** at NVIDIA Research. Head of research group: Prof. Gal Chechik.

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**, Weizmann Institute of Science. Thesis title: "A Passive 8D Display: Light and Viewpoint Sensitive Display of 3D Content". Final grade: 97/100. Supervisor: Prof. Anat Levin.
2008-2011	**BSc, Computer Science and Mathematics**, The Hebrew University of Jerusalem. GPA: 96/100.

Honors and awards

2020	ICML 2020 Outstanding Paper award for "On Learning Sets of Symmetric Elements" (lead author, two papers out of 4990 submissions).
2020	The Giora Yoel Yashinski Memorial Prize in recognition of academic excellence and scientific accomplishments during Ph.D. studies, Feinberg Graduate School.
2019	Participant in the SIGGRAPH 2019 Doctoral Consortium.
2015	The Feinberg Graduate School Dean's prize in recognition of academic excellence and scientific accomplishments.

Teaching

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

2018 (Winter) Geometry and Deep Learning (WIS)

Professional activities

- I serve as a reviewer for NeurIPS, ICML, ICLR, ICCV, CVPR, SIGGRAPH, ACM TOG, and Machine Learning.
- I initiated and co-organized the Israeli Workshop on Geometric Deep Learning, IGDL (2020, 2021) (https://gdl-israel.github.io/).

Preprints

[1] StyleGAN-NADA: CLIP-Guided Domain Adaptation of Image Generators. Gal R., Patashnik O., **Maron H.**, Chechik G., Cohen-Or D. *August 2021*

[2] Architecture Agnostic Federated Learning using Graph HyperNetworks. Litany, O., **Maron H.**, Acuna D., Kautz, J., Chechik G., and Fidler, S. *June 2021*

Published papers

[3] Deep Permutation Equivariant Structure from Motion. Moran, D., Koslowsky, H., Kasten, Y., **Maron, H.**, Galun, M., & Basri, R., *International Conference on Computer Vision (ICCV) 2021*

[4] Scene-Agnostic Multi-Microphone Speech Dereverberation. Yemini, Y., Fetaya, E., **Maron, H.**, & Gannot, S., *INTERSPEECH 2021.*

[5] On Size Generalization in Graph Neural Networks. Yehudai, G., Fetaya, E., Meirom, E., Chechik, G., & **Maron, H.**, *International Conference on Machine Learning (ICML) 2021.*

[6] How to Stop Epidemics: Controlling Graph Dynamics with Reinforcement Learning and Graph Neural Networks. Meirom, E., **Maron, H.**, Mannor, S., & Chechik, G., *International Conference on Machine Learning (ICML) 2021.*

[7] Secondary Vertex Finding in Jets with Neural Networks. Shlomi, J., Ganguly, S., Gross, E., Cranmer, K., Lipman, Y., Serviansky, H., **Maron, H.**, & Segol, N., *European Physical Journal C, 2021.*

[8] On the Universality of Rotation Equivariant Point Cloud Networks. Dym, N. & **Maron, H.**, *International Conference on Learning Representations (ICLR)2021.*

[9] Auxiliary Learning by Implicit Differentiation. Navon A.*, Achituve I.*, **Maron H.**, Chechik G. & Fetaya E. (* equal contribution), *International Conference on Learning Representations (ICLR) 2021.*

[10] Self-Supervised Learning for Domain Adaptation on Point-Clouds. Achituve, I., **Maron, H.**, & Chechik, G. *Winter Conference on Applications of Computer Vision (WACV), 2021.*

[11] 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.*

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

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

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

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

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

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

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

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

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

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

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

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

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

[25] 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.*

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

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

Other work 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.