

Or Sharir

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EDUCATION	Hebrew University of Jerusalem , Israel Ph.D. (direct track) in Computer Science Advisor: Prof. Amnon Shashua	2014-2021
	Hebrew University of Jerusalem , Israel B.Sc. in Physics, Mathematics, and Computer Science	2009-2013
Academic Positions	Senior Lecturer Faculty of Data and Decision Sciences, Israel Institute of Technology (Technion)	Fall 2025-Present
	Postdoctoral Scholar Department of Computing + Mathematical Sciences, California Institute of Technology. Advisors: Prof. Anima Anandkumar and Prof. Garnet Chan	2021-2023

PUBLICATIONS

1. C. Li, **O. Sharir**, S. Yuan, and G. K. Chan, “Image Super-resolution Inspired Electron Density Prediction”, *Nature Communications*, 2025 (Impact Factor = 15.7).
2. P. Han, R. D. Kocielnik, A. P. Saravanan, R. L. Jiang, **O. Sharir**, and A. Anandkumar, “ChatGPT Based Data Augmentation for Improved Parameter-Efficient Debiasing of LLMs”, *Conference on Language Modeling (COLM)*, 2024.
3. **O. Sharir**, A. Shashua, G. Carleo, “Neural tensor contractions and the expressive power of deep neural quantum states”, *Physical Review B (PRB)*, 2022 (Impact Factor = 3.908)
4. Y. Levine, N. Wies, **O. Sharir**, H. Bata, A. Shashua, “Limits to Depth Efficiencies of Self-Attention”, *Advances in Neural Information Processing Systems (NeurIPS)*, 2020.
5. Y. Levine, B. Lenz, O. Dagan, D. Padnos, **O. Sharir**, S. Shalev-Shwartz, A. Shashua, Y. Shoham, “SenseBERT: Driving Some Sense into BERT”, *Annual Meeting of the Association for Computational Linguistics (ACL)*, 2020.
6. **O. Sharir**, Y. Levine, N. Wies, G. Carleo, A. Shashua, “Deep Autoregressive Models for the Efficient Variational Simulation of Many-body Quantum Systems”, *Physical Review Letters (PRL)*, 2020 (Impact Factor = 9.227)
7. Y. Levine, **O. Sharir**, N. Cohen, A. Shashua, “Quantum Entanglement in Deep Learning Architectures”, *Physical Review Letters (PRL)*, 2019 (Impact Factor = 9.227)
8. Y. Levine, **O. Sharir**, A. Shashua, “Benefits of Depth for Long-Term Memory of Recurrent Networks”, *International Conference on Learning Representations (ICLR), Workshop Track*, 2018
9. **O. Sharir**, A. Shashua, “On the Expressive Power of Overlapping Architectures of Deep Learning”, *International Conference on Learning Representations (ICLR)*, 2018 (Acceptance rate = 36.0%)
10. **O. Sharir**, A. Shashua, “Sum-Product-Quotient Networks”, *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2018 (Acceptance rate = 33.2%)
11. N. Cohen, **O. Sharir**, A. Shashua, “On the Expressive Power of Deep Learning: A Tensor Analysis”, *Conference on Learning Theory (COLT)*, 2016 (Acceptance rate = 31.7%)
12. N. Cohen, **O. Sharir**, A. Shashua, “Deep SimNets”, *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2016 (Acceptance rate = 29.9%)

PREPRINTS

1. **O. Sharir**, A. Anandkumar, “Incrementally-Computable Neural Networks: Efficient Inference for Dynamic Inputs”, *arXiv:2307.14988*, 2023. (appeared at the *Efficient Systems for Foundation Models Workshop @ ICML 2023*). Under review.
2. **O. Sharir**, G. K. Chan, A. Anandkumar, “Towards Neural Variational Monte Carlo That Scales Linearly with System Size”, *arXiv:2212.11296*, 2022. (also appeared at the *AI4Science Workshop @ NeurIPS 2022*). Under review.

3. Y. Levine, **O. Sharir**, A. Ziv, A. Shashua, “On the Long-Term Memory of Deep Recurrent Networks”, *arXiv:1710.09431v2*, 2018
4. N. Cohen, **O. Sharir**, Y. Levine, R. Tamari, D. Yakira, A. Shashua, “Analysis and Design of Convolutional Networks via Hierarchical Tensor Decompositions”, *arXiv:1705.02302*, 2017
5. **O. Sharir**, R. Tamari, N. Cohen, and A. Shashua, “Tensorial Mixture Models”, *arXiv:1610.04167*, 2016

WHITE PAPERS

1. G. Beniamini, Y. Dor, A. Vinnikov, S. Granot Peled, O. Weinstein, **O. Sharir**, N. Wies, T. Nussbaum, I. Ben Shaul, T. Zekharya, Y. Levine, S. Shalev-Shwartz, and A. Shashua, “FormulaOne: Measuring the Depth of Algorithmic Reasoning Beyond Competitive Programming”, AAI Technologies, 2025.
2. S. Shalev-Shwartz, A. Shashua, G. Beniamini, Y. Levine, **O. Sharir**, N. Wies, I. Ben-Shaul, T. Nussbaum, and S. Granot Peled, “Artificial Expert Intelligence through PAC-reasoning”, AAI Technologies, 2024.
3. O. Lieber, **O. Sharir**, B. Lenz, Y. Shoham, “Jurassic-1: Technical details and evaluation”, AI21 Labs, 2021.
4. Y. Zeldes, D. Padnos, **O. Sharir**, B. Peleg, “Technical Report: Auxiliary Tuning and its Application to Conditional Text Generation”, AI21 Labs, 2020.
5. **O. Sharir**, B. Peleg, Y. Shoham, “The Cost of Training NLP Models: A Concise Overview”, AI21 Labs, 2020.

BOOK CHAPTERS

1. Y. Levine, **O. Sharir**, N. Cohen, A. Shashua, “Bridging Many-Body Quantum Physics and Deep Learning via Tensor Networks”, *Mathematical Aspects of Deep Learning, Cambridge University Press. 2022.*
2. Y. Levine, N. Wies, **O. Sharir**, N. Cohen, A. Shashua, “Tensors for Deep Learning Theory: Analyzing Deep Learning Architectures via Tensorization”, *Tensors for Data Processing: Theory, Methods and Applications, Academic Press. 2022.*

INVITED TALKS

1. “Incrementally-Computable Neural Networks: Efficient Inference for Dynamic Inputs”, Celebrating the AI Revolution Conference, Hebrew University of Jerusalem, May 2023.
2. “Incrementally-Computable Neural Networks for the Variational Simulation of Quantum Many-Body Systems”, AI-Week 2023, Tel Aviv University, Feb 2023.
3. “The expressiveness of neural networks for quantum state representation”, Machine Learning Augmented Sampling for the Molecular Sciences workshop at CECAM, May 2022.
4. “Autoregressive Simulation of Many-body Quantum Systems”, Haifa ML Meetup, Feb 2020.
5. “Autoregressive Simulation of Many-body Quantum Systems”, Deep Learning for Physics Seminar Series, Princeton Center for Theoretical Science, Oct 2019.
6. “Autoregressive Simulation of Many-body Quantum Systems”, (spotlight talk) workshop on “Theory of Deep Learning: Where next?”, Institute for Advanced Studies, Oct 2019.
7. “Autoregressive Simulation of Many-body Quantum Systems”, Machine Learning Seminar, New York University, October 2019.
8. “Autoregressive Simulation of Many-body Quantum Systems”, DOLCIT Seminar Series at California Institute of Technology, September 2019.
9. “Autoregressive Simulation of Many-body Quantum Systems”, workshop on “AI and Tensor Factorization for Physical, Chemical, and Biological Systems”, September 2019.
10. “On the Suitability of Neural Networks for the Simulation of Quantum Many-body Systems”, 16th International Conference on Approximation Theory, May 2019.
11. “Deep autoregressive models for the efficient variational simulation of many-body quantum systems”, special Quantum Information seminar, Technion - Israel Institute of Technology, April 2019.
12. “Deep autoregressive models for the efficient variational simulation of many-body quantum systems”, Machine Learning seminar, Technion - Israel Institute of Technology, March 2019.
13. “On the Expressive Power of ConvNets and RNNs as a Function of their Architecture”, PixelClub seminar series, Technion - Israel Institute of Technology, January 2019.
14. “On the Expressive Power of ConvNets and RNNs as a Function of their Architecture”, Machine Learning seminar series, Bar Ilan University, May 2018.

15. “On the Expressive Power of Overlapping Architectures of Deep Learning”, Haifa ML Meetup, March 2018.
16. “On the Expressive Power of Overlapping Architectures of Deep Learning”, Deep Learning Summer School Contributed Talk, June 2017.
17. “Expressive Efficiency and Inductive Bias of Convolutional Networks”, Machine Learning Israel Seminar Meetup, May 2017.
18. “The Expressive Efficiency of the Architectural Attributes of Convolutional Networks”, Theory Lunch at Princeton, Apr 2017.

REVIEWER	ICLR	2019,2021-2023
	AISTATS	2021-2022
	Journal of Approximation Theory	2017-2018,2021
	NeurIPS (Best Reviewer 2019 - top 8.5%)	2018-2023
	ICML	2019-2020
	JMLR	2018-2019
	UAI	2018
	COLT	2018
	CVPR'17 Tensor Methods in Computer Vision Workshop	2017

TEACHING EXPERIENCE	Undergraduate Engineering Projects: Advisor on ML projects.	2016-2020
	Image Processing Course: TA	2015-2019
	Advanced Seminar in Deep Learning: Organizer.	2016-2018
	Computer Vision Course: Grader.	2015-2016
	Algorithms Course: Grader.	2014-2014

INDUSTRY Positions	AAI Technologies: Co-Founder. (in stealth; see whitepaper)	2023-Present
	AI21 Labs: Research Scientist.	2019-2021
	Led several research and engineering projects, including the pre-training and initial inference server of the first commercial LLM rivaling GPT3, which we called Jurassic-1.	
	Three Tall Guys: Co-founder and CTO	2013-2014
	We created <i>Here-a-Story</i> , an iPhone app for sharing audio stories about places.	
Freelance iOS Developer		2009-2016
Select projects:		
<ul style="list-style-type: none"> • MySongbook: An iOS app for viewing and managing chord sheets for songs. Developed and sold by myself with nearly 50,000 sales. • HomeStyler: An iOS+Android augmented reality app for interior design. Contract work for Autodesk. Developed the core augmented reality experience of placing furniture into rooms photographed by the user. 		