Evgenii Zheltonozhskii

✉ zheltonozhskiy@gmail.com
evgeniizh.com
evgeniyzhe
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Research interests

Condensed matter theory of strongly correlated materials, in particular, topological phases and topological quantum computing; applications of deep learning and self-supervised learning in physics.

Academic Degrees

2022 – present **PhD in Physics**, *Technion – Israel Institute of Technology*, Haifa, GPA *99.3* (current).
- Advisor: Prof. Netanel Lindner;
- Thesis topic: "Topological Quantum Computing Beyond Majorana Fermions"

2020 – 2021 **MSc in Computer Science**, *Technion – Israel Institute of Technology*, Haifa, GPA *95.6*, Cum Laude.
- Advisors: Prof. Alex Bronstein, Prof. Avi Mendelson, and Dr. Chaim Baskin.
- Thesis title: "Reducing Supervision in Visual Recognition Tasks"

2016 – 2020 **BSc in Computer Science and BSc in Physics and Mathematics**, *Technion – Israel Institute of Technology; The Rothschild Excellence Program*, Haifa, GPA *92.0*, Cum Laude, Top 8.3% of class in CS.

Visiting appointments

2024 **Visiting PhD Researcher**, *California Institute of Technology (Caltech)*, Pasadena.
- Advisor: Prof. Gil Refael;
- Project topic: exciton detection and topological effects

Teaching experience

Joint graduate and undergraduate courses: "Solid State Physics," "Advanced Topics in Deep Learning," "Deep Learning on Computational Accelerators," "Introduction to Machine Learning"; organization of seminar in Deep Learning.

Fellowships, Awards, and Honors

2024 **The Prof. Rahamimoff Travel Grants for Young Scientists**.

2024 **JSPS HOPE fellow**.

2023 – present **Adams Fellowship**.

2023 **Physics Faculty Research Day poster competition**, *1st place prize*, Technion IIT.

2023 **The Helen Diller Quantum Center Excellence scholarship**.

2022 **QHack Hackathon**, *2nd place at IBM Qiskit Challenge, 1st place at Google Quantum AI Research Challenge*.

2022 **Paperswithcode top contributor award**.

2021 **Forchheimer Foundation Fellowship**, Technion IIT.

2021 **CS Dean Excellence Scholarship**, Technion IIT.

2016–2020 **Technion Rothschild Excellence Program**.

2019 **International Collegiate Programming Contest world semifinals**, *bronze medal (11th place)*.

2018 **International Collegiate Programming Contest world semifinals**, *honorable mention*.

2017 **President's List of Honors for Scholastic Achievements**, Technion IIT.

2016–2020 **Dean's List of Honors for Scholastic Achievements**, *5 times*, Technion IIT.

2012 **Tomba Math Summer Camp**, 1st place prize.

2011 **Gillis National Mathematical Olympiad**, *Finals participation*, Weizmann Institute of Science.

Industry

Fall 2020 **Research Intern**, *Snap Research*, Los Angeles (remote), Creative Vision group.
- Hosted by Sergey Tulyakov and Olly Woodford;
- Worked on 3D shape reconstruction by training on dataset single 2D views.

Summer 2017 **Google Summer of Code Participant**, *OpenCV*.
GPU enabled deep learning framework: introducing GPU support for tiny-dnn, C++14 header-only deep learning library

Public Professional Activities

Reviewer for **2021**: WACV, ICCV, CVPR; **2022**: WACV, ICCV, CVPR; **2023**: T-PAMI

Publications

Refereed Papers in Professional Journals

[1] **Evgenii Zheltonozhskii**, Ady Stern, and Netanel H. Lindner. "Identifying the topological order of quantized half-filled Landau levels through their daughter states". In: *Physical Review B* 110 (24 Dec. 2024), p. 245140. DOI: 10.1103/PhysRevB.110.245140. arXiv: 2405.03780 [cond-mat.mes-hall]. URL: https://link.aps.org/doi/10.1103/PhysRevB.110.245140.

[2] Moshe Kimhi, Shai Kimhi, **Evgenii Zheltonozhskii**, Or Litany, and Chaim Baskin. "Semi-Supervised Semantic Segmentation via Marginal Contextual Information". In: *Transactions on Machine Learning Research* (May 2024). ISSN: 2835-8856. arXiv: 2308.13900 [cs.CV]. URL: https://openreview.net/forum?id=i5yKW1pmjW.

[3] Raymond Li et al. "StarCoder: may the source be with you!" In: *Transactions on Machine Learning Research* (May 2023). Reproducibility Certification. ISSN: 2835-8856. arXiv: 2305.06161 [cs.CL]. URL: https://openreview.net/forum?id=KoFOg41haE.

[4] Tom Avrech, **Evgenii Zheltonozhskii**, Chaim Baskin, and Ehud Rivlin. "GoToNet: Fast Monocular Scene Exposure and Exploration". In: *Journal of Intelligent & Robotic Systems* 105.3 (July 2022), p. 65. DOI: 10.1007/s10846-022-01646-9. URL: https://doi.org/10.1007/s10846-022-01646-9.

[5] Aarohi Srivastava et al. "Beyond the Imitation Game: Quantifying and extrapolating the capabilities of language models". In: *Transactions on Machine Learning Research* (Apr. 2023). ISSN: 2835-8856. URL: https://openreview.net/forum?id=uyTL5Bvosj.

[6] Ben Finkelshtein, Chaim Baskin, **Evgenii Zheltonozhskii**, and Uri Alon. "Single-node attacks for fooling graph neural networks". In: *Neurocomputing* 513 (Nov. 2022), pp. 1–12. ISSN: 0925-2312. DOI: https://doi.org/10.1016/j.neucom.2022.09.115. URL: https://www.sciencedirect.com/science/article/pii/S0925231222012012.

[7] Alex Karbachevsky, Chaim Baskin, **Evgenii Zheltonozhskii***, Yevgeny Yermolin, Freddy Gabbay, Alex M. Bronstein, and Avi Mendelson. "Early-Stage Neural Network Hardware Performance Analysis". In: *Sustainability* 13.2 (Jan. 2021): *Energy-Efficient Computing Systems for Deep Learning*. Ed. by José Cano, José L. Abellán, and David Kaeli, p. 717. ISSN: 2071-1050. DOI: 10.3390/su13020717. URL: http://dx.doi.org/10.3390/su13020717.

[8] Yaniv Nemcovsky, **Evgenii Zheltonozhskii***, Chaim Baskin, Brian Chmiel, Alex M. Bronstein, and Avi Mendelson. "Adversarial robustness via noise injection in smoothed models". In: *Applied Intelligence* (Aug. 2022). DOI: 10.1007/s10489-022-03423-5. URL: https://doi.org/10.1007/s10489-022-03423-5.

[9] Yury Nahshan, Brian Chmiel, Chaim Baskin, **Evgenii Zheltonozhskii**, Ron Banner, Alex M. Bronstein, and Avi Mendelson. "Loss Aware Post-Training Quantization". In: *Machine Learning* (Oct. 2021). ISSN: 1573-0565. DOI: 10.1007/s10994-021-06053-z. URL: https://link.springer.com/article/10.1007/s10994-021-06053-z.

[10] Chaim Baskin, Brian Chmiel, **Evgenii Zheltonozhskii***, Ron Banner, Alex M. Bronstein, and Avi Mendelson. "CAT: Compression-Aware Training for Bandwidth Reduction". In: *Journal of Machine Learning Research* 22.269 (Aug. 2021), pp. 1–20. URL: http://jmlr.org/papers/v22/20-1374.html.

[11] Chaim Baskin, **Evgenii Zheltonozhskii***, Tal Rozen, Natan Liss, Yoav Chai, Eli Schwartz, Raja Giryes, Alexander M. Bronstein, and Avi Mendelson. "NICE: Noise Injection and Clamping Estimation for Neural Network Quantization". In: *Mathematics* 9.17 (Sept. 2021): *Computational Optimizations for Machine Learning*. Ed. by Freddy Gabbay. ISSN: 2227-7390. DOI: 10.3390/math9172144. URL: https://www.mdpi.com/2227-7390/9/17/2144.

[12] Chaim Baskin, Natan Liss, Eli Schwartz, **Evgenii Zheltonozhskii**, Raja Giryes, Alex M. Bronstein, and Avi Mendelson. "UNIQ: Uniform Noise Injection for Non-Uniform Quantization of Neural Networks". In: *ACM Transactions on Computer Systems* 37.1–4 (Mar. 2021). ISSN: 0734-2071. DOI: 10.1145/3444943. URL: https://arxiv.org/abs/1804.10969.

Refereed Papers in Conference Proceedings

[13] Adam Botach, **Evgenii Zheltonozhskii**, and Chaim Baskin. "End-to-End Referring Video Object Segmentation with Multimodal Transformers". In: *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*. June 2022. URL: https://openaccess.thecvf.com/content/CVPR2022/html/Botach_End-to-End_Referring_Video_Object_Segmentation_With_Multimodal_Transformers_CVPR_2022_paper.html.

[14] **Evgenii Zheltonozhskii**, Chaim Baskin, Avi Mendelson, Alex M. Bronstein, and Or Litany. "Contrast to Divide: Self-Supervised Pre-Training for Learning with Noisy Labels". In: *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*. Jan. 2022, pp. 1657–1667. URL: https://openaccess.thecvf.com/content/WACV2022/html/Zheltonozhskii_Contrast_To_Divide_Self-Supervised_Pre-Training_for_Learning_With_Noisy_Labels_WACV_2022_paper.html.

[15] Ameen Ali, Tomer Galanti, **Evgenii Zheltonozhskii**, Chaim Baskin, and Lior Wolf. "Weakly Supervised Recovery of Semantic Attributes". In: *First Conference on Causal Learning and Reasoning*. Apr. 2022. URL: https://openreview.net/forum?id=GdAzRedTV7J.

[16] Brian Chmiel, Chaim Baskin, Ron Banner, **Evgenii Zheltonozhskii**, Yevgeny Yermolin, Alex Karbachevsky, Alex M. Bronstein, and Avi Mendelson. "Feature Map Transform Coding for Energy-Efficient CNN Inference". In: *International Joint Conference on Neural Networks (IJCNN)*. July 2020, pp. 1–9. DOI: 10.1109/IJCNN48605.2020.9206968. URL: https://arxiv.org/abs/1905.10830.

[17] Chaim Baskin, Natan Liss, **Evgenii Zheltonozhskii**, Alex M. Bronstein, and Avi Mendelson. "Streaming Architecture for Large-Scale Quantized Neural Networks on an FPGA-Based Dataflow Platform". In: *IEEE International Parallel and Distributed Processing Symposium Workshops*. May 2018, pp. 162–169. DOI: 10.1109/IPDPSW.2018.00032. URL: https://arxiv.org/abs/1708.00052.

Preprints and Workshop Papers

[18] **Evgenii Zheltonozhskii**, Ady Stern, and Netanel H. Lindner. *Topological phase transitions between bosonic and fermionic quantum Hall states near even-denominator filling factors*. Aug. 2025. arXiv: 2508.17457 [cond-mat.mes-hall]. URL: https://arxiv.org/abs/2508.17457.

[19] Long Phan et al. *Humanity's Last Exam*. Feb. 2025. arXiv: 2501.14249 [cs.LG]. URL: https://arxiv.org/abs/2501.14249.

[20] Anton Lozhkov et al. *StarCoder 2 and The Stack v2: The Next Generation*. Feb. 2024. arXiv: 2402.19173 [cs.SE]. URL: https://arxiv.org/abs/2402.19173.

[21] Maxim Fishman, Chaim Baskin, **Evgenii Zheltonozhskii**, Ron Banner, and Avi Mendelson. *On Recoverability of Graph Neural Network Representations*. Jan. 2022. URL: https://arxiv.org/abs/2201.12843.

[22] **Evgenii Zheltonozhskii**, Chaim Baskin, Alex M. Bronstein, and Avi Mendelson. *Self-Supervised Learning for Large-Scale Unsupervised Image Clustering*. Aug. 2020. URL: https://arxiv.org/abs/2008.10312.

[23] **Evgenii Zheltonozhskii**, Chaim Baskin, Yaniv Nemcovsky, Brian Chmiel, Avi Mendelson, and Alex M. Bronstein. *Colored Noise Injection for Training Adversarially Robust Neural Networks*. Mar. 2020. URL: https://arxiv.org/abs/2003.02188.

[24] Yochai Zur, Chaim Baskin, **Evgenii Zheltonozhskii**, Brian Chmiel, Itay Evron, Alex M. Bronstein, and Avi Mendelson. *Towards Learning of Filter-Level Heterogeneous Compression of Convolutional Neural Networks*. Apr. 2019. URL: https://arxiv.org/abs/1904.09872.

Talks and Seminars

Invited talks

2024 **Identifying the topological order of quantized half-filled Landau levels through their daughter states**, *Quantum Matter Seminar*, Caltech, Pasadena, US.

2024 **Optimized preparation of magic state for parafermionic qudits via non-adiabatic braiding**, *Google Quantum AI*, Santa Barbara, US.

2022 **End-to-End Referring Video Object Segmentation with Multimodal Transformers**, *Vision Meets Language meetup*.

Plenary talks

2024 **Identifying the topological order of quantized half-filled Landau levels through their daughter states**.
- Helen Diller Quantum Center Retreat, Technion, Israel, 2025
- Correlated Days, Yearim, Israel, 2024

2022 **Competition of dissipative and Andreev processes in Abelian quantum Hall–superconductor junctions**, *Helen Diller Quantum Center retreat*, Zichron Yaakov, Israel.

Parallel talks

2025 **Identifying the topological order of quantized half-filled Landau levels through their daughter states**, APS March Meeting, Anaheim, USA, 2025.

2024 **Optimized preparation of magic state for parafermionic qudits via non-adiabatic braiding**, APS March Meeting, Minneapolis, USA, 2024.

2023 **Competition of dissipative and Andreev processes in Abelian quantum Hall–superconductor junctions**.
- Israel Physical Society Annual Meeting, Tel Aviv, Israel, 2023
- APS March Meeting, Las Vegas, USA, 2023

2020 **Feature map transform coding for energy-efficient CNN inference**, *International Joint Conference on Neural Networks*, Glasgow, United Kingdom (online).

Poster presentation

2024 **Optimized preparation of magic state for parafermionic qudits via non-adiabatic braiding**.
- Physics Faculty Research Day, Technion, Israel
- Young Researchers School on Topological aspects of low-dimensional quantum physics, Maynooth University, Ireland

2022–2024 **Competition of dissipative and Andreev processes in Abelian quantum Hall–superconductor junctions**.
- Technion Research Day, Technion, Israel, 2024
- 15th HOPE meeting, Kyoto, Japan, 2024
- Princeton Summer School on Condensed Matter Physics, Princeton University, USA, 2023
- Physics Faculty Research Day, Technion, Israel, 2023
- A Quantum Many-Body Handshake: Theory and Simulation meet Experiment, Weizmann Institute of Science, Israel, 2022
- Topological Matter School, San Sebastian, Spain, 2022

2022 **Contrast to divide: Self-supervised pre-training for learning with noisy labels**, *IEEE/CVF Winter Conference on Applications of Computer Vision*, Waikoloa, Hawaii (online).

2020 **Self-supervised learning for large-scale unsupervised image clustering**, *NeurIPS Self-Supervised Learning Workshop*, online.

2018 **Anomalous Floquet-Anderson Insulators in Weakly Driven Systems**, *Technion Rothschild Excellence Program Poster Session*, Haifa, United Kingdom (online).

2011 **Color Image Coding by the Correlation Based Approach**, *SciTech Poster Competition*, Haifa, Israel.

Special Activities

2024 **Young Researchers School on Topological aspects of low-dimensional quantum physics**, *school*, Maynooth University.

2023 **Princeton Summer School on Condensed Matter Physics**, *summer school*, Princeton.

2023 **Challenges and advances in quantum computing**, *winter school*, Sde Boker.

2022 **UnitaryHack**, *quantum open source hackathon*, a monetary prize for contribution to Qiskit.

2022 **Topological Matter School**, *summer school*, San Sebastian.

2017 – 2020 **Research Internship**, *Technion*, Haifa, Professor Alex Bronstein's group.

2018 – 2019 **Research Internship**, *Technion*, Haifa, Professor Netanel Lindner's group.

2018 **Deep Bayes**, *summer school*, Moscow.

Summer 2017 **Google Summer of Code Participant**, *OpenCV*.