

Evgenii Zheltonozhskii

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](https://doi.org/10.1103/PhysRevB.110.245140). arXiv: [2405.03780](https://arxiv.org/abs/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](https://arxiv.org/abs/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](https://arxiv.org/abs/2305.06161) [cs.CL]. URL: <https://openreview.net/forum?id=KoF0g41haE>.
- [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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1109/IPDPSW.2018.00032). URL: <https://arxiv.org/abs/1708.00052>.

Preprints and Workshop Papers

- [18] Long Phan et al. *Humanity's Last Exam*. Feb. 2025.
- [19] Anton Lozhkov et al. *StarCoder 2 and The Stack v2: The Next Generation*. Feb. 2024. arXiv: [2402.19173](https://arxiv.org/abs/2402.19173) [cs.SE]. URL: <https://arxiv.org/abs/2402.19173>.
- [20] 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>.
- [21] **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>.
- [22] **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>.
- [23] 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**, *Correlated Days*, Yearim, Israel.
- 2022 **Competition of dissipative and Andreev processes in Abelian quantum Hall–superconductor junctions**, *Helen Diller Quantum Center retreat*, Zichron Yaakov, Israel.

Parallel talks

- 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*.