Ben Finkelshtein

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Education

University of Oxford January 2023 - Present
PhD in Computer Science Oxford, United Kingdom
- Supervised by Prof. Michael M. Bronstein and Dr. İsmail İlkan Ceylan
- Co-wrote Cooperative Graph Neural Networks and Graph & Geometric ML in 2024, published on Towards Data Science
- Awarded the Clarendon Fund Scholarship towards overseas tuition fees and living costs
- Served as head TA for the Geometric Deep Learning and Graph Representation Learning courses

Technion - Israel Institute of Technology November 2019 - June 2022
M.Sc in Computer Science Haifa, Israel
- Supervised by Prof. Alexander Bronstein and Prof. Chaim Baskin
- GPA: 99.1; Graduated with highest honors (summa cum lauda, top 1%)
- Served as head TA for the Geometric Deep Learning course and created all practicals

Technion - Israel Institute of Technology November 2013 - July 2017
B.Sc. in Electrical Engineering and B.Sc. in Physics Haifa, Israel
- GPA: 92.1; Graduated with great honors (magna cum lauda, top 3%)
- Completed two separate degrees as Fellow in IDF's competitive Psagot program for distinguished students (4% acceptance)

Publications

First author of Learning on Large Graphs using Intersecting Communities NeurIPS 2024
A new and fundamentally different pipeline for learning on very large non-sparse graphs using intersecting communities

Author of Almost Surely Asymptotically Constant Graph Neural Networks NeurIPS 2024
A new angle on the expressive power of GNNs by studying how the predictions of a GNN probabilistic classifier evolve

First author of Cooperative Graph Neural Networks ICML 2024
A more dynamic and flexible message-passing paradigm in which each node can choose a different communication strategy

Co-first author of Strategic Classification with Graphs Neural Networks ICLR 2023
Learning in a setting where users that are dependant can modify their features to obtain favorable predictions

First author of A Simple and Universal Rotation Equivariant Point-cloud Network ICML 2022, TAG in ML
A simple architecture which is equivariant to rigid motions with the ability to approximate any equivariant function

First author of Single-Node Attack for Fooling Graph Neural Networks KDD21 & Neurocomputing by Elsevier
Showcased that GNNs are vulnerable to a realistic single-node adversarial attack, even when the attacker cannot be chosen

Professional Experience

eBay June 2022 – January 2023
Applied Researcher Natanya, Israel
- Engineered NLP models designed to match search queries with the most relevant landing pages for search engine optimization
- Developed a keyword extraction technique, combined it with GPT, and subsequently fine-tuned the process
- Achieved a 30% increase in landing page click-through rates (CTR) within the first three months of implementation

SKF Group, AI Center of Excellence August 2020 – May 2021
Data Scientist Yokne'am Illit, Israel
- Led research in event prediction, anomaly detection, and time series forecasting to aid machinery fault diagnosis within SKF
- Designed, customized, and implemented end-to-end machine learning pipelines, from ideation to production
- Designed an event-based evaluation metric that improved the company's anomaly detection results from 78% to 90%

Rafael Advanced Defense Systems October 2017 – July 2020
Algorithm Developer and Physicist; Specialized military service assignment (1 recruit per year) Haifa, Israel
- Created a neural network which predicts n-body problem solutions in astronomy or aerodynamics for classified company use
- Created physics-based simulations for comparative analysis with potential models which resulted in 21% increase in accuracy
- Conducted data processing, statistical analysis, and derived insights on confidential data, culminating in a report & presentation