

# Ben Finkelshtein

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## Education

### University of Oxford

January 2023 - Present  
Oxford, United Kingdom

#### PhD in Computer Science

- 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  
Haifa, Israel

#### M.Sc in Computer Science

- Supervised by Prof. Alexander Bronstein and Dr. 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  
Haifa, Israel

#### B.Sc. in Electrical Engineering and B.Sc. in Physics

- 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](#) Under review for NeurIPS 2024  
*A new and fundamentally different pipeline for learning on very large non-sparse graphs using intersecting communities*

Author of [Graph Neural Network Outputs are Almost Surely Asymptotically Constant](#) Under review for 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  
Natanya, Israel

#### Applied Researcher

- 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  
Yokne'am Illit, Israel

#### Data Scientist

- 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  
Haifa, Israel

#### Algorithm Developer and Physicist; Specialized military service assignment (1 recruit per year)

- 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

## Teaching Experience

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### University of Oxford, Faculty of Computer Science

January 2023 – Present

#### Teaching Assistant

Oxford, United Kingdom

- Served as head TA for the Geometric Deep Learning and Graph Representation Learning courses
- Created the coding assignments for the different classes
- Guided a cohort of twenty graduate and undergraduate students through coursework

### Blue Education

July 2023 – January 2024

Taught Math, Physics and Computer Science for A-Levels, SAT, and college exams as an online part time tutor

### Technion - Israel Institute of Technology, Faculty of Computer Science

March 2021 – June 2022

#### Teaching Assistant

Oxford, United Kingdom

- Served as head TA for the Geometric Deep Learning course 236605 • Created all [tutorials and code notebooks](#)
- Supervised forty graduate and undergraduate students including final course projects
- Conducted hybrid online and in-classroom lectures and practice sessions

### Matematix – High-School and College Exam Preparation Center

July 2012 – November 2013

#### Teacher

Kiryat Motzkin, Israel

- Taught Mathematics, Physics, English and Coding for matriculation, SAT, and college exams
- Led sessions of thirty students twice a week