

Omri Ben-Dov

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Professional Summary

I am a PhD candidate at the Max Planck Institute for Intelligent Systems, focusing on collective action in ML and novel generative modeling frameworks. My research explores how individuals can coordinate data modifications to influence machine learning outcomes, alongside the creation of new generative modeling frameworks. I am passionate about the interaction of machine learning with the real world, from what we can learn about the world using ML, to how society and ML can influence each other.

Education

Max Planck Institute for Intelligent Systems <i>PhD in Computer Science, Expected Graduation: March 2026</i>	Tübingen, Germany <i>2021–Present</i>
The Hebrew University of Jerusalem <i>MSc in Computer Science</i> Thesis: "Automatic Pose Estimation of Free-Flying Fruit Flies". <i>Magna cum laude.</i>	Jerusalem, Israel <i>2018–2021</i>
The Hebrew University of Jerusalem <i>BSc in Physics and Computer Science</i> <i>Magna cum laude.</i>	Jerusalem, Israel <i>2015–2018</i>

Research Experience

Max Planck Institute for Intelligent Systems <i>PhD Candidate</i>	Tübingen, Germany <i>2021–Present</i>
<ul style="list-style-type: none">○ Research focus: <i>Collective action</i> in machine learning and development of <i>generative model frameworks</i>.○ Studied how a change of <i>optimization and learning algorithm</i> affects the success of collective action.○ Investigated the connection between <i>density estimation</i> to a simpler training algorithm for <i>WGANs</i>.○ Supervised by <i>Samira Samadi</i> (MPI-IS) and <i>Amartya Sanyal</i> (University of Copenhagen).○ Previous work in the Perceiving Systems department, developing a <i>3D articulated model of laboratory rats</i> with <i>Michael J. Black</i> (MPI-IS), <i>Silvia Zuffi</i> (IMATI-CNR) and <i>Sergi Pujades</i> (INRIA) using computer vision tools.	
Weizmann Institute of Science <i>Research Assistant</i>	Rehovot, Israel <i>2021</i>
<ul style="list-style-type: none">○ Applied signal processing and matched filtering on gravitational waves data to detect binary black holes.○ Worked with <i>Barak Zackay</i>.	
The Hebrew University of Jerusalem <i>MSc in Micro-Flight Group</i>	Jerusalem, Israel <i>2018–2021</i>
<ul style="list-style-type: none">○ Developed an algorithm to estimate kinematic parameters of flies from video using a 3D model.○ Supervised by <i>Tsevi Beatus</i>.	

Work Experience

Intel **Petah Tikva, Israel**
QA Automation Engineer *2015*

- Developed and maintained scripts for automated testing and quality assurance.

IDF (Technological Unit) **Israel**
Mechanical Designer, Intelligence Corps *2010–2014*

- Developed mechanical devices, including ideation, 3D CAD design, technical drawings, assembly, testing and documentation.

Leadership and Service

2022–2024: PhD Student Representative, Gender Equality Program, MPI-IS

- Collaborated with institute leadership to implement gender equality and diversity initiatives.

2023–Present: Committee Member, Athena Group, MPI-IS

- Organizing monthly lunches at the Tübingen site to discuss and promote diversity and inclusion.

Awards and Honors

2021: Dean's Honor List, The Hebrew University of Jerusalem (MSc).

2017: Participant in Weizmann Institute *Amos de-Shalit Ulpana* for excellent students in Physics.

2016–2018: Excellent Students in Computer Science Program (BSc).

Technical Skills

Languages: Python, MATLAB, C, C++

Libraries: PyTorch, Scikit-learn

Tools: Git, Jupyter

Publications

O. Ben-Dov, J. Fawkes, S. Samadi, A. Sanyal. The Role of Learning Algorithms in Collective Action. *Proceedings of the 41st International Conference on Machine Learning (ICML)*, PMLR 235: 3443–3461, 2024.

O. Ben-Dov, P. S. Gupta, V. Abrevaya, M. J. Black, P. Ghosh. Adversarial Likelihood Estimation With One-Way Flows. *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, 3779–3788, 2024.

R. Maya, N. Lerner, **O. Ben-Dov**, A. Pons, T. Beatus. **A hull reconstructionreprojection method for pose estimation of free-flying fruit flies.** *Journal of Experimental Biology*, 226 (21): jeb245853, 2023.

A. Pons, I. Perl, **O. Ben-Dov**, R. Maya, T. Beatus. **Solving the thoracic inverse problem in the fruit fly.** *Bioinspiration & Biomimetics*, 18 (4): 046002, 2023.

O. Ben-Dov, T. Beatus. Model-Based Tracking of Fruit Flies in Free Flight. *Insects*, 13(11): 1018, 2022.