

# Eliahu Horwitz

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I am a PhD student in Computer Science specializing in Weight Space Learning—treating neural networks as data and developing models that operate on other models. My work aims to uncover the hidden structure within neural network weights, enabling new ways to analyze, retrieve, and even generate models.

## EDUCATION

The Hebrew University of Jerusalem

- PhD Computer Science, advised by Prof. Yedid Hoshen 2022-2026 (anticipated)
- M.Sc Computer Science, advised by Prof. Yedid Hoshen 2021-2022
- B.Sc Computer Science 2017-2021

## AWARDS

- Selected as a recipient of the "Israel Council for Higher Education Scholarship for Outstanding PhD Students in Artificial Intelligence and Data Science (VATAT)" 2024-2027  
(Selected for a three year scholarship – awarded to 20 outstanding PhD students from the entire country)
- Selected as a recipient of the "KLA Scholarship for Outstanding Graduate Students" 2022  
(Awarded to 3 M.Sc students from the Hebrew University)
- Selected as a recipient of the "Center for Interdisciplinary Data Science Research" (CIDR) fellowship 2021-2023  
(Selected for two consecutive years - awarded to outstanding research students in data core science from the Hebrew University)
- Dean's List 2019-2020  
(During my B.Sc)

## PUBLICATIONS

- Learning on Model Weights using Tree Experts** (Arxiv Preprint) 2024  
Eliahu Horwitz\*, Bar Cavia\*, Jonathan Kahana\*, Yedid Hoshen  
[horwitz.ai/probex](http://horwitz.ai/probex)
- Deep Linear Probe Generators for Weight Space Learning** (ICLR 2025') 2024  
Jonathan Kahana, Eliahu Horwitz, Imri Shuval, Yedid Hoshen  
[vision.huji.ac.il/probegen](http://vision.huji.ac.il/probegen)
- Dataset Size Recovery from LoRA Weights** (Arxiv Preprint) 2024  
Mohammad Salama, Jonathan Kahana, Eliahu Horwitz, Yedid Hoshen  
[vision.huji.ac.il/dsire](http://vision.huji.ac.il/dsire)
- Real-Time Deepfake Detection in the Real-World** (Arxiv Preprint) 2024  
Bar Cavia, Eliahu Horwitz, Tal Reiss, Yedid Hoshen  
[vision.huji.ac.il/ladeda](http://vision.huji.ac.il/ladeda)
- Model Tree Heritage Recovery** (ICLR 2025') 2024  
Eliahu Horwitz, Asaf Shul, Yedid Hoshen  
[horwitz.ai/mother](http://horwitz.ai/mother)
- Distilling Datasets Into Less Than One Image** (Arxiv Preprint) 2024  
Asaf Shul\*, Eliahu Horwitz\*, Yedid Hoshen  
[horwitz.ai/podd](http://horwitz.ai/podd)
- Recovering the Pre-Fine-Tuning Weights of Generative Models** (ICML 2024') 2024  
Eliahu Horwitz, Jonathan Kahana, Yedid Hoshen  
[horwitz.ai/spectral\\_detuning](http://horwitz.ai/spectral_detuning)
- Dreamix: Video Diffusion Models are General Video Editors** (Arxiv Preprint) 2023  
Eyal Molad\*, Eliahu Horwitz\*, Dani Valevski\*, Alex Rav Acha, Yossi Matias, Yael Pritch, Yaniv Leviathan†, Yedid Hoshen†  
[dreamix-video-editing.github.io](https://dreamix-video-editing.github.io)
- Confusion: Confidence Intervals for Diffusion Models** (Arxiv Preprint) 2022  
Eliahu Horwitz, Yedid Hoshen  
[horwitz.ai/confusion](http://horwitz.ai/confusion)
- Back to the Feature: Classical 3D Features are All You Need for 3D Anomaly Detection** (VAND - CVPR 23' workshop) 2022  
Eliahu Horwitz, Yedid Hoshen  
[horwitz.ai/3d\\_ads](http://horwitz.ai/3d_ads)

- Anomaly Detection Requires Better Representations** (*Self Supervised Learning: What is Next? - ECCV 22' workshop*) 2022  
 Tal Reiss, Niv Cohen, Eliahu Horwitz, Ron Abutbul, Yedid Hoshen  
[vision.huji.ac.il/ssrl\\_ad](http://vision.huji.ac.il/ssrl_ad)
- DeepSIM: Image Shape Manipulation from a Single Augmented Training Sample** (*ICCV 21' - Oral Presentation*) 2021  
 Yaek Vinker\*, Eliahu Horwitz\*, Nir Zabari, Yedid Hoshen  
[vision.huji.ac.il/deepsim](http://vision.huji.ac.il/deepsim)

## WORK EXPERIENCE

- Student Researcher at Google Research** (*Full-Time Internship*) 2022-2023
- Conducted research on text-to-video diffusion models
- Research Summer Internship at Lightricks** (*Full-Time Summer Internship*) 2021
- Worked on generating synthetic datasets by using the inner representation of pretrained GANs
- Software Engineer at Salesforce, Root Cause Analysis Team** (*Part-Time*) 2020-2021
- Developed a "static code analysis" tool for security vulnerabilities prioritization - used by security researchers
- Senior Full-Stack .NET and React Developer at Valsecco** (*Part-Time*) 2018-2020
- Played a key role in the development lifecycle, shipping features across the tech-stack
- Senior Android and Node.js Server-Side Developer at StorePower** 2016-2018
- Migrated an Android app from legacy code to "clean architecture" while providing white-labeling capabilities
- Android and .NET Developer at an Incubator (LV Holdings – ByWriter, Kyozu)** 2014-2016
- Designed and implemented scalable components with an emphasis on parallelized data mining

## TEACHING EXPERIENCE

- Teaching Assistant in the "Web Application Development" Course at the Hebrew University** 2023-Present
- Lectured on web development covering backend and frontend aspects
  - Mentoring 8 teams in the creation of their applications from both product and development standpoints
- Teaching Assistant in the "Engineering Projects" Course at the Hebrew University** 2023-2024
- Mentoring 3 teams in the creation of their applications from both product and development standpoints
- Teaching Assistant in the "Image Processing" Course at the Hebrew University** 2020-Present
- Designing and writing exercises in traditional image processing and deep learning
  - Providing exercises related support to the students and holding weekly office hours
- Teaching Assistant in the "Nueral Networks for Images" Course at the Hebrew University** 2022
- Providing exercises related support to the students

## ADDITIONAL EXPERIENCE

- Co-Organizer of an ICLR 2025' Workshop on Weight Space Learning** 2025
- Organized the "Neural Network Weights as a New Data Modality" workshop focused on weight space learning
  - [weight-space-learning.github.io](https://weight-space-learning.github.io)
- Reviewer for ICLR, CVPR, ICML, ICCV, ECCV, SIGGRAPH** 2022-Present
- Analysis Intern at fresh.fund Early-Stage VC** (*Internship*) 2018-2019
- Performed in-depth technical due diligence to evaluate prospective investment offerings
- Developing "Fondo - Interactive Wallpaper" Android App** (*Side Project*) 2015-2016
- Created an Android app to display information on the devices wallpaper, interfacing with various APIs and SDKs
  - Gained a deep understanding of product development stages emphasizing UI, UX, and Software Architecture
- Military Service, Malnap-Merkaz (Network Backbone Room of Central Command, C4I)** 2011- 2014
- Led a 20-soldier team in designing, deploying, and maintaining critical computer networks