

# Aviv Ratzon

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## OBJECTIVE

PhD student in Computational and Theoretical Neuroscience (Technion, expected 2026). Interested in representational drift, noisy learning, and forming of representations. Seeking a postdoc bridging theory and neurotechnology.

## EDUCATION

- **Technion - Israel Institute of Technology** Oct 2020 – Present (Expected May 2026)  
*Direct PhD, Computational & Theoretical Neuroscience, Advisors: Omri Barak and Dori Derdikman* Haifa, Israel
  - Thesis title: Leveraging Representational Drift to Peek Into the Brain's Learning Algorithm.
  - Developed and applied models to analyze sparse, high-dimensional, and noisy time-series data for neural recordings.
  - Investigated the dynamics of stochastic systems and noisy learning processes in abstract models (e.g., feedforward/recurrent networks).
- **Technion - Israel Institute of Technology** Oct 2016 – Oct 2020  
*BSc, Electrical Engineering* Haifa, Israel
  - Specializations: Machine Learning, Signal Processing, Control, Biological Signal Processing

## PUBLICATIONS

- [1] Ratzon, A., Barak, O. (2025). **Multi-step Predictive Coding Leads To Simplicity Bias**. *Arxive*
- [2] Ratzon, A., Derdikman, D., Barak, O. (2024). **Representational drift as a result of implicit regularization**. *eLife*
- [3] Khatib, D., Ratzon, A., Sellevoll, M., Barak, O., Morris, G., Derdikman, D (2023). **Experience, not time, determines representational drift in the hippocampus**. *Neuron*

## CONFERENCES

- **Contributed Talks:** Bernstein 2022, Janelia 2023
- **Posters:** ISFN 2022, Cosyne 2023, iNav 2024, KISN 2024, ISFN 2025,
- **Summer Schools:** Neurobridges 2022, TECT 2023

## HONORS AND AWARDS

- Feinsod Award: Neurology and Brain Sciences 2025
- Gutwirth Excellence Scholarship 2024
- Faculty Excellence Scholarship 2024

## TEACHING

- **Teaching Assistant - Bioinformatics and Genomics in Medicine** 2025
  - Introduction to Machine Learning methods in medical research and analysis methods for genomic data.
- **Teaching Assistant - Quantitative Methods for Medical Students** 2021-2024
  - Teaching first-year medical students various subjects such as frequency domain analysis, regression, programming, dynamical systems, dimensionality reduction, algebra, etc.
- **Teaching Assistant - Physical Chemistry Course** 2024
  - Tutorials on differential and integral calculus.
- **Teaching Assistant - ISFN Data Analysis Workshop** 2022
  - Designed a short data analysis project for calcium imaging data.

## EXPERIENCE

- **Qualcomm** 2019 - 2020  
*Chip design verification, student position* Haifa, Israel
- **Qualitest** 2015 - 2019  
*QA Engineer* Yokneam, Israel
- **Kidum** 2015  
*Psychometric (SAT equivalent) Teacher* Haifa, Israel

## SKILLS

- **Programming:** Python (NumPy, Pandas, PyTorch), C/C++, Matlab, VHDL
- **Quantitative Methods:** Probability theory, stochastic processes, optimization, Monte Carlo simulation, linear algebra, regression, signal processing
- **Tools:** Git, Linux, LaTeX
- **Languages:** Hebrew (native), English (fluent), German (basic)