

Zvi N. Roth

Curriculum Vitae

Research

- 2023-present **Research Fellow**, School of Psychological Sciences
Faculty of Social Sciences, Tel Aviv University
- 2021-2023 **Research Fellow**, Laboratory of Brain and Cognition
National Institute of Mental Health, NIH
- 2016-2021 **Postdoctoral Fellow**, Laboratory of Brain and Cognition
PI: Dr. Elisha Merriam
National Institute of Mental Health, NIH
- 2009-2016 **Graduate student**, Neurobiology Dept. & ELSC
PI: Prof. Ehud Zohary
Hebrew University of Jerusalem
- 2008-2009 **Undergraduate student**, Racah Institute of Physics & ELSC
PI: Prof. Haim Sompolinsky
Hebrew University of Jerusalem

Education

- 2018 **Summer Course**, Computational Neuroscience: Vision
Cold Spring Harbor Laboratory, NY
- 2009-2017 **Ph.D. Program** in Brain Sciences: Computation and Information Processing
ELSC, Hebrew University of Jerusalem
PhD Thesis: *Brain Representations of Visual Percepts*
- 2008 Ulpanat De Shalit **Summer School** – Physics
Weizmann Institute, Rehovot
- 2006-2009 **BSc.** in Physics and Computer Science
Hebrew University of Jerusalem

Peer-reviewed Journal Papers

* Denotes equal contribution

- Kim, J. H., Yin, T., Merriam, E. P., & **Roth, Z. N.** (2023)
Pupil size is sensitive to low-level stimulus features, independent of arousal-related modulation, eNeuro
- **Roth, Z. N.**, & Merriam, E. P. (2023)
Representations in human primary visual cortex drift over time, Nature Communications
DOI: <https://doi.org/10.1038/s41467-023-40144-w>

- **Roth, Z. N.**, Kay, K.*, & Merriam, E. P.* (2022)
Natural scene sampling reveals reliable coarse-scale orientation tuning in human V1, Nature Communications
DOI: <https://doi.org/10.1038/s41467-022-34134-7>
- Burlingham, C. S., Ryoo, M., **Roth, Z. N.**, Mirbagheri, S., Heeger, D. J., & Merriam, E. P. (2022)
Task-related hemodynamic responses in human early visual cortex are modulated by task difficulty and behavioral performance, eLife
DOI: <https://doi.org/10.7554/eLife.73018>
- Steinberg, N. J.*, **Roth, Z. N.***, & Merriam, E. P. (2022)
Spatiotopic and retinotopic memory in the context of natural images, Journal of Vision
DOI: <https://doi.org/10.1167/jov.22.4.11>
- **Roth, Z. N.**, Ryoo, M., & Merriam, E. P. (2020)
Task-related activity in human visual cortex, PLOS Biology
DOI: <https://doi.org/10.1371/journal.pbio.3000921>
- **Roth, Z. N.**, Heeger, D. J., & Merriam, E. P. (2018)
Stimulus vignetting and orientation selectivity in human visual cortex, eLife
DOI: <https://doi.org/10.7554/eLife.37241>
- **Roth, Z.N.** (2016)
Functional MRI Representational Similarity Analysis Reveals a Dissociation between Discriminative and Relative Location Information in the Human Visual System, Frontiers in Integrative Neuroscience
DOI: <https://doi.org/10.3389/fnint.2016.00016>
- **Roth, Z.N.**, & Zohary, E. (2015)
Position and Identity Information Available in fMRI Patterns of Activity in Human Visual Cortex, The Journal of Neuroscience
DOI: <https://doi.org/10.1523/JNEUROSCI.0752-15.2015>
- **Roth, Z. N.**, & Zohary, E. (2014)
Fingerprints of Learned Object Recognition Seen in the fMRI Activation Patterns of Lateral Occipital Complex, Cerebral Cortex
DOI: <https://doi.org/10.1093/cercor/bhu042>

Teaching Experience

June 2021	Guest Lecturer 'Laminar fMRI', in: <i>Advanced fMRI analyses for cognitive and vision research</i> (course no. 76962) ELSC, Hebrew University of Jerusalem
2015-2016	Teacher Assistant <i>Uncovering principles of human vision using fMRI</i> (course no. 76962) Initiated and built course, and delivered lectures ELSC, Hebrew University of Jerusalem
2012-2014	Teacher Assistant <i>Cognitive Processes A</i> (course no. 76912) Modified course, translated to English, and delivered lectures ELSC, Hebrew University of Jerusalem
November 2012	Guest Lecturer 'Visual Perception', in: <i>Cognitive Processes for Cognitive Sciences</i> (course no. 06115) Hebrew University of Jerusalem
2012-2013	Teacher Assistant <i>Data Structures</i> (course no. 10031) Prepared and delivered review lectures Azrieli College of Engineering, Jerusalem

Invited Lectures

- **Perception Lunch, University of Minnesota**, 25 January 2022 (by Zoom). *Orientation selectivity and fMRI redux: what are we actually measuring?*
- **Informal Center for Perceptual Systems (CPS) Seminar, The University of Texas at Austin**, 14 September 2022. *Orientation selectivity and fMRI redux: what are we actually measuring?*

Conference Lectures

- **Roth, Z.N.**, Kay, K., Merriam, E.P. (2022), *Orientation selectivity in human V1 revisited*. Vision Sciences Society annual meeting.
- **Roth, Z.N.**, Ryoo, M., Merriam, E.P. (2020), *Widespread task-related fMRI responses in visual cortex*. Israel Society for Neuroscience (ISFN) 28th Meeting.
- Huber, L., Merriam, E.P., Kim, I., Chai, Y., Kashyap, S., Polimeni, J.R., **Roth, Z.**, Shim, W.M., Kim, S.G., Ivanov, D. and Poser, B., (2019), *Measuring layer-dependent CBV fMRI in the visual system*. ISMRM 27th Annual Meeting & Exhibition. In *Proc Intl Soc Mag Reson Med* (p. 0399).
- **Roth, Z.N.**, Heeger, D.J., & Merriam, E.P. (2018), *Orientation selectivity and stimulus vignetting in human visual cortex*. Vision Sciences Society annual meeting. *Journal of Vision*, 18(10), 1052-1052.
- **Roth, Z.N.**, & Zohary, E. (2016). *Location and Identity Information Carried by fMRI Activation Patterns in Human Visual Cortex*. ELSC Ein Gedi Retreat.

- **Roth, Z.N.**, & Zohary, E. (2015). *Location and identity information carried by fMRI activation patterns in human visual cortex*. ISFN 24th Meeting.
- **Roth, Z.**, & Zohary, E. (2012). *Learning to recognize degraded objects is associated with a greater match to the objects' template patterns in lateral occipital cortex*. Israel Society for Neuroscience (ISFN) 21st Meeting.

Conference Posters

- Kim, J.H., Yin C., Merriam, E.P., **Roth, Z.N.** (2022), *Pupil size is sensitive to low-level features, independent of arousal-related modulation*. Vision Sciences Society annual meeting.
- **Roth, Z.N.**, Heeger, D.J., & Merriam, E.P. (2020), *Stimulus vignetting and orientation selectivity in human visual cortex*. Israel Society for Neuroscience (ISFN) 28th Meeting.
- **Roth, Z.N.**, Steinberg, N.J., Merriam, E.P. (2019), *Spatiotopic memory is more precise than retinotopic memory in the context of natural images*. Vision Sciences Society annual meeting.
- Steinberg, N.J., **Roth, Z.N.**, Movshon, J.A., Merriam, E.P. (2019), *Neural correlates of the double-drift illusion*. Vision Sciences Society annual meeting.
- **Roth, Z.N.**, Heeger, D.J., & Merriam, E.P. (2018), *Orientation selectivity and stimulus vignetting in human visual cortex*. Cognitive Computational Neuroscience annual meeting.
- Ryoo, M., Burlingham, C., **Roth, Z.**, Mirbagheri, S., Heeger, D.J., & Merriam, E. (2018), *A widespread task-related hemodynamic response in human V1 is modulated by task difficulty*. Vision Sciences Society annual meeting.
- **Roth, Z.N.**, & Merriam, E.P. (2017). *Stimulus vignetting and coarse-scale biases for orientation in human visual cortex*. Society for Neuroscience (SfN) annual meeting.
- **Roth, Z.N.**, & Merriam, E.P. (2017). *Stimulus vignetting and orientation selectivity in human visual cortex*. National Institute of Mental Health (NIMH) Training Day.
- **Roth, Z.N.**, & Zohary, E. (2016). *Position Information in Human Visual Cortex*. Organization of Human Brain Mapping (OHBM) Annual Meeting.
- **Roth, Z.N.**, & Zohary, E. (2016). *Position Information in Human Visual Cortex*. Jerusalem Brain Community (JBC) Annual Retreat.
- **Roth, Z. N.**, & Zohary, E. (2014). *Position invariance and object affordance in human parietal cortex*. European Conference of Visual Perception (ECVP) 2014 Meeting.
- **Roth, Z. N.**, & Zohary, E. (2014). *Position Invariance and Object Affordances in Human Parietal Cortex*. ELSC Ein Gedi Retreat.
- **Roth, Z.**, & Zohary, E. (2013). *Learning to recognize degraded objects is associated with a greater match to the objects' template fMRI activation patterns in Lateral Occipital Cortex*. Vision Sciences Society 2013 Meeting.

Awards

2022	NIH Fellows Award for Research Excellence 2023
2019	NIMH Intramural Research Program OFT Trainee Travel Award

2019	VSS 2019 National Eye Institute Postdoctoral Travel Award
2016-2017	ELSC Postdoctoral Fellowship Abroad scholarship
2016	ELSC Prize for the first scientific paper based on data collected from the SKYRA magnet
2014	ELSC Prize for Outstanding Academic Performance 2013-2014 for published paper
2007	Dean's list, Faculty of Science, Hebrew University of Jerusalem

Personal Info

- Citizenship: Israeli, American, Australian
- Place of birth: Melbourne, Australia
- Married + 3 children
- Website: <https://zviroth.github.io/>
- List of publications: <https://scholar.google.com/citations?user=9vJ8bAYAAAAJ>