Bernstein Network
Computational Neuroscience

Postdoctoral and graduate student positions available

How does the brain infer causal relationships in the world? How do beliefs about the causal structure of a scene influence motion perception? How can the underlying computations be modeled using Bayesian inference, and how can these computations be tested using neurophysiological experiments?

For this collaborative project between the computational neuroscience lab of Dr. Ralf Haefner, and the neurophysiology lab of Dr. Gregory DeAngelis, both at the Department of Brain & Cognitive Sciences at the University of Rochester, we are looking to recruit two postdoctoral fellows and PhD students. This project is highly collaborative with all researchers being involved in most aspects of the project from experimental design to data collection to data analysis & theory development. The project is based on our prior collaborative work [1,2] and we will have two related posters at the upcoming SfN meeting [3,4].

For the theoretical/computational efforts, candidates are expected to have a background in a quantitative field like computational neuroscience, machine learning, math & psychology, etc.. For the experimental efforts, candidates are expected to have a background in neuroscience, experimental psychology, biomedical engineering, or a related field, and previous research experience in systems neuroscience is highly beneficial. If interested, please submit your CV, a statement of research interests, and the names and contact information for three references to ralf.haefner@rochester.edu or gdeangelis@ur.rochester.edu. Ralf will also be at SfN to answer any questions.

The UR/BCS department is at the center of a vibrant and supportive scientific community. It has particularly strong ties to the Center of Visual Science, the Department for Neuroscience, the Department for Computer Science, the Department for Linguistics, and the Data Science Institute.

Rochester in upstate NY is family-friendly and affords a high quality of life with access to a world-class symphony, museums, and a wide range of outdoor activities: several parks within cycling distance, 20min by car to sandy beaches on Lake Ontario, 1h to Finger Lakes / wine country / skiing, 3h to great hiking in the Adirondacks. We also have a balanced 4 season climate with weather for every occasion: Lilac Festival in the spring, beautiful sunny summers (<10 days above 90 degrees), gorgeous fall foliage, and guaranteed snow in the winter. More info here: https://www.visitrochester.com.

[1] Shivkumar, S., DeAngelis, G. C., & Haefner, R. M. (2025). Hierarchical motion perception as causal inference. Nature Communications, 16(1), 3868.
[2] Lengyel, G., Shivkumar, S., DeAngelis, G. C., & Haefner, R. M. (2026). Bayesian causal inference unifies perceptual and neuronal processing of center-surround motion in area MT. eLife. https://doi.org/10.7554/eLife.110621.1
[3] Dong et al. (2026). Neural correlates of speed-dependent relative motion perception in area MT. SfN Poster# PSTR184.01 / AA2, WCC Halls A-C, Nov 16, 1-5pm
[4] Yuan et al. (2026). Motion perception as causal inference: testing the causality assumption. SfN Poster# PSTR184.02 / AA3, WCC Halls A-C, Nov 16, 1-5pm