Diya Basrai

diyabasrai@gmail.com

Neuroscience PhD student interested in the neural basis of movement through experimental and computational approaches

Education

Northwestern University (2022-present)

- PhD student, Interdepartmental Neuroscience

University of California, San Diego (2015-2019)

- B.S., magna cum laude, Physiology and Neuroscience

Research Experience

Northwestern University (2022-present)

- PhD Student, Miri & Glaser labs (2022-Present)
- Examining thalamocortical interactions underlying naturalistic movement

(2020-2022)

- Research Tech, Tresch Lab
- Applying brain-machine interfaces to restore walking in rats with spinal cord injury

(2018-2020)

- Undergrad Researcher, Systems Neural Engineering Lab
- Created the autoLFADS tutorial, explaining how to use a custom deep learning tool to analyze neural activity data.

Research

- **Diya Basrai**, ..., Andrew Miri, Joshua Glaser. (2025) Constraining inference of across-region interactions using neural activity perturbations, bioRxiv (In revision)
- Amy Kristl, ..., **Diya Basrai**, Andrew Miri. (2025) Interactions between motor cortical forelimb regions and their influence on muscles reorganize across behaviors, Nature Communications
- Natalie Koh, ..., **Diya Basrai**, Andrew Miri. (2025) Distributed influence on primary motor cortex preceding self-initiated movement, (Under review at Nature Communications)

- Akiko Saiki-Ishikawa, Mark Agrios, Sajishnu Savya, Adam Forrest, ..., **Diya Basrai**, Andrew Miri. (2025) Hierarchy between forelimb premotor and primary motor cortices and its manifestation in their firing patterns, eLife
- Alex Burton..., **Diya Basrai**, Matthew Tresch, Philipp Gutruf. (2023) Fully implanted battery-free high power platform for chronic spinal and muscular functional electrical stimulation, Nature Communications
- Mohammad Reza Keshtkaran, Andrew R. Sedler, ..., **Diya Basrai**, Chethan Pandarinath. (2022) A large-scale neural network training framework for generalized estimation of single-trial population dynamics, Nature Methods
- **Diya Basrai**, ..., Joshua Glaser, Matthew Tresch. (2022) Aligning Neural Activity Recorded from Rats during Locomotion Across Time And Subjects, poster at SFN 2022
- **Diya Basrai**, ..., Matthew Tresch. (2021) Using DeepLabCut To Predict Locations of Subdermal Landmarks From Video, poster at NIH's BRAIN Initiative Meeting 2021 and conference paper at Living Machines 2022 conference

Teaching Experience

Northwestern University (2024-present)

- Teaching Assistant
- TA for two quarters, teaching undergraduate neuroscience courses (systems neuroscience, human genetics)

University of California, San Diego (2018-2019)

- Teaching Assistant
- TA for four quarters teaching undergraduate biology courses (molecular biology x3, comparative physiology)
- Received >90% recommendation from students in all quarters teaching

Miscellaneous

- Teaches Stand-up 101 @ The Revival Theater
- Gave lecture to Walter Payton Prep School on causality as part of outreach program

Other

- Stand-up comic, recently released comedy special
- Headline contributor for The Onion, sample work here