

## HARSHA GURNANI, PhD

Postdoctoral scholar-fellow, University of Washington

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### WORK EXPERIENCE

2023-	Postdoctoral Researcher, <i>University of Washington</i> .	Advisor: Prof Bing Brunton
2022	Postdoctoral Researcher, <i>University College London</i> .	Advisor: Prof Angus Silver
2015-2016	Research Internship, <i>Brandeis University</i> .	Advisor: Prof Eve Marder, Dr Timothy O' Leary

### EDUCATION

2016 - 2022	PhD in Neuroscience, <i>University College London</i> Advisor: Prof R Angus Silver, FRS
2012 –2016	Bachelor of Science with Major in <b>Biology</b> , Minor in <b>Mathematics</b> <i>Indian Institute of Science</i> [First Class with Distinction; University Gold Medal]

### FELLOWSHIPS AND AWARDS

2022-	UW Data Science Fellowship
2022-2024	Schmidt Science Fellowship (2-year postdoctoral fellowship)
2019	Computational and Systems Neuroscience (Cosyne 2019) Travel Grant
2017	Award from DeepMind for Cajal Course in Computational Neuroscience (CCCN 2017)
2016-2021	Wellcome Trust PhD Studentship
2015	Khorana Scholarship for 3-month research internship [Khorana Scholars Program, DBT]
2012-2016	KVPY (Undergraduate) Fellowship [Dept. of Science and Technology, India]

### PUBLICATIONS

1. Sinha A\*, Gleeson P\*, Marin B, Dura-Bernal S, Panagiotou S, Crook S, Cantarelli M, Cannon RC, Davison AP, **Gurnani H**, Silver RA. **The NeuroML ecosystem for standardized multi-scale modelling in neuroscience**. bioRxiv 2023; doi: [10.1101/2023.12.07.570537](https://doi.org/10.1101/2023.12.07.570537)
2. **Gurnani H\***, Cayco-Gajic NA\*. **Signatures of task learning in neural representations**. Curr Opinion in Neurobiology - Computational Neuroscience issue 2023, doi: [10.1016/j.conb.2023.102759](https://doi.org/10.1016/j.conb.2023.102759)
3. **Gurnani H\***, Silver RA. **Multidimensional population activity in an electrically coupled inhibitory circuit in the cerebellar cortex**. Neuron 2021; doi: [10.1016/j.neuron.2021.03.027](https://doi.org/10.1016/j.neuron.2021.03.027)
4. Lanore F\*, Cayco-Gajic NA\*, **Gurnani H**, Coyle D, Silver RA. **Cerebellar granule cell axons support high dimensional representations**. Nature Neuroscience, 2021; doi: [10.1038/s41593-021-00873-x](https://doi.org/10.1038/s41593-021-00873-x)
5. Lak A\*, Okun M, Moss MM, **Gurnani H**, Farrell K, Wells MJ, Reddy CB, Kepecs A, Harris KD, Carandini M. **Dopaminergic and Prefrontal Basis of Learning from Sensory Confidence and Reward Value**. Neuron 2020; doi: [10.1016/j.neuron.2019.11.018](https://doi.org/10.1016/j.neuron.2019.11.018) [as preprint doi: 10.1101/411413]

#### In Active Preparation:

6. **Gurnani H\***, Brunton BW. **Feedback controllability constrains learning timescales of motor adaptation**. [Preprint expected early 2024]

### TEACHING AND MENTORING

2023-2024	STEP-WISE Scholar, University of Washington (Pedagogical training)
2021	TA for BIOL0029: Computational Biology, UCL
2020, 2021	Course instructor and content creator for Data Science and Machine Learning in Python, UCL
2020, 2021	TA for NEUR0019: Neuroinformatics course (methods in quantitative neurophysiology), UCL
2018, 2019	TA at LIDO-PhD SysMIC course: Systems Training in Maths, Informatics, Statistics and Computational Biology, UCL
2016	TA at Computational Approaches to Memory and Plasticity (CAMP), Bangalore
2016	TA for MB208: Theoretical and Computational Neuroscience (IISC, Bangalore)

**2019-2021** Mentor at ReachOut, UK (working with grade 5/6 students)  
**2020-21** Mentor for 3-month PhD rotation project  
**2019-20** Mentor-supervisor for BSc. thesis project

## SELECTED CONFERENCE PRESENTATIONS

**Project:** Transformation of cortico-pontine inputs during associative learning

**Harsha Gurnani\***, RA Silver

**Oct 2023** Lake Conferences, Neural Dynamics [Poster]

**Feb 2022** 5<sup>th</sup> France Cerebellar Meeting [Talk]

**Project:** Cerebellar-like structure improves feedback-learning in recurrent neural networks

*Alessandro Barri\*, Harsha Gurnani, RA Silver.*

**Feb 2021** Computational and System Neuroscience conference (*Cosyne*) [Poster]

**Project:** Dynamics of electrically coupled inhibitory networks

**Harsha Gurnani\***, NA Cayco Gajic, RA Silver.

**Feb 2021** Computational and System Neuroscience conference (*Cosyne*) [Poster]

**Oct 2019** (Janelia) Junior Scientist Workshop on Theoretical Neuroscience [Talk]

**Project:** Coordination of inhibitory Golgi Population Activity in the Cerebellar Cortex

**Harsha Gurnani\***, RA Silver.

**July 2019** Gordon research Seminar & Conference (Cerebellum) [Talk]

**Mar 2019** Computational and Systems Neuroscience conference (*Cosyne*) [Poster]

**Jan 2019** 3<sup>rd</sup> France Cerebellar Meeting [Poster]

**Oct 2018** Champalimaud Research Symposium [Poster]

**Project:** Dopaminergic and frontal signals for reward learning in perceptual decisions

*Armin Lak\*, M Okun, M Moss, Harsha Gurnani, MJ Wells, CB Reddy, KD Harris, M Carandini.*

**Nov 2018** Neuroscience 2018 (SfN) [Poster]

**Nov 2017** Neuroscience 2017 (SfN) [Poster]

**Project:** Maintaining neuronal properties during growth with local and global homeostatic regulation

**Harsha Gurnani\***, T O' Leary, E Marder.

**Nov 2016** Neuroscience 2016 (SfN) [Poster]

**Oct 2015** Dynamic Neural Networks: STG Meeting 2015 [Talk]

## WORKSHOPS AND SCHOOLS

**Oct 2019** Janelia Junior Scientist Workshop on Theoretical Neuroscience

**May 2018** Optical Imaging and Electrophysiological Methods in Neuroscience;

**Aug 2017** CAJAL Course in Computational Neuroscience;

**July 2014** Computational Approaches to Memory and Plasticity;

**Dec 2013** Bangalore Cognition Workshop

## VOLUNTEERING

**2022** Organizing committee, UCL NeuroAI

**2019-20** Organizing committee, UCL PhDs in Systems Neuroscience

**2018-19** PhD student committee, NPP, UCL

**2016-18** Winter volunteer with CRISIS UK