

Vivek Sharma

PhD Scholar

Theoretical Neuroscience | Dynamical Systems | Whole-Brain Modeling | Neuromodulation

About me

I am a PhD researcher at the Donders Institute for Brain, Cognition, and Behaviour, Radboud University, exploring how large-scale brain dynamics emerge from interacting neural systems.

My work integrates theoretical modelling, whole-brain simulations, and neurophysiological data to study neural synchrony, criticality, and how brain stimulation can influence neural dynamics.

Languages

English — Fluent
Hindi — Native

- @ vivekmodgil@proton.me
- github.com/vivekmodgill
- in vivek-sharma-2715b6129
- orcid.org/0000-0002-3675-3827
- Personal Website

RESEARCH EXPERIENCE

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|--------------|--|
| 2026–Present | Postdoctoral Fellow
<i>Donders Institute for Brain, Cognition and Behaviour, Radboud University</i>
Nijmegen, Netherlands 📍 |
| 2021–2022 | Research Assistant
<i>Institute for Bioengineering of Catalonia</i>
Barcelona, Spain 📍 |
| 2018–2021 | Project Assistant
<i>National Brain Research Centre</i>
Gurugram, India 📍 |

EDUCATION

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|-----------|---|
| 2022–2026 | PhD Neuroscience
<i>Donders Institute for Brain, Cognition and Behaviour, Radboud University</i>
Nijmegen, Netherlands 📍 |
| 2016–2018 | M.Sc. Biochemistry
<i>Jamia Millia Islamia</i>
New Delhi, India 📍 |
| 2012–2015 | B.Sc. (Hons) Zoology
<i>University of Delhi</i>
New Delhi, India 📍 |

SKILLS

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| Theoretical Neuroscience
Dynamical systems Whole-brain modeling Neural dynamics |
| Neurophysiology
EEG / MEG analysis Spectral analysis Signal processing |
| Neuroimaging
MRI processing Image-guided stimulation planning |
| Neuromodulation
Transcranial Ultrasound Stimulation (TUS) Stimulation protocols |
| Scientific computing
Python MATLAB R Linux $\LaTeX$ |

TEACHING & MENTORING

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| 2022–2026 | Student Supervision
Donders Institute for Brain, Cognition and Behaviour, Radboud University
Supervision of Master's and Bachelor's thesis students and mentoring of research students during laboratory rotations. |
| 2021–2022 | Teaching Assistant
Neuromatch Academy
Mentored students in computational neuroscience through project-based learning. |

EUROPEAN UNION RESEARCH PROJECTS

- 2022–2026** **eBRAIN-Health (Horizon Europe, Grant No. 101058516).** Development of BrainX3, an interactive platform for visualisation and exploration of multimodal brain data and whole-brain simulations supporting the eBRAIN-Health digital neuroscience infrastructure.
- 2022–2026** **AISN — Artificial Intelligence in Stroke Neurorehabilitation (Horizon Europe, Grant No. 101057655).** Identification of dynamical EEG biomarkers of stroke recovery to support prediction of motor recovery and personalised neurorehabilitation strategies.
- 2021–2022** **TVB-Cloud — The Virtual Brain Cloud (Horizon 2020, Grant No. 826421).** Contribution to the development of a cloud-based Virtual Research Environment for large-scale brain modelling and neurophysiological data analysis within the EBRAINS ecosystem.

PUBLICATIONS

- 2026** **Sharma, V.**, Tiesinga, P. H. E., & Cabral, J. (2026). *How stimulation waveform shape affects collective oscillations in the brain networks*. bioRxiv. doi:10.64898/2026.06.16.732561.
- 2026** Khalili-Ardali, M., **Sharma, V.**, Mandahar, T. S., Santos, F. P. D., Tiesinga, P., & Ramsey, N. (2026). *Electrophysiological Signature of Stroke Recovery: Investigating EEG biomarkers for prognostic insights*. bioRxiv. doi:10.64898/2026.06.01.728505.
- 2025** **Sharma, V.**, Drost, B. J. N. M., & Tiesinga, P. H. E. (2025). *Dynamical models reveal distance to criticality in ageing brain dynamics*. bioRxiv. doi:10.1101/2025.09.26.678711.
- 2025** Drost, B. J. N. M., **Sharma, V.**, & Tiesinga, P. (2025). *From computational models to clinical practice: Whole brain modelling in stroke research*. Open Research Europe, 5, 280. doi:10.12688/openreseurope.21294.1.
- 2024** Yang, M., Drost, B. J. N. M., Aviñó, D., Felici, B., Santos, F. P., Vilarrubias, R. B., **Sharma, V.**, & Verschure, P. F. M. J. (2024). *BrainX3 3.0: Advancing Neuroinformatics and Artificial Brains for Living Machines*. In *Biomimetic and Biohybrid Systems*. doi:10.1007/978-3-031-72597-5_1.
- 2023** Verschure, P. F. M. J., Santos, F. P., & **Sharma, V.** (2023). *Redefining stroke rehabilitation: Mobilizing the embodied goal-oriented brain*. Current Opinion in Neurobiology, 83, 102807. doi:10.1016/j.conb.2023.102807.
- 2023** **Sharma, V.**, Santos, F. P., & Verschure, P. F. M. J. (2023). *Patient-specific modeling for guided rehabilitation of stroke patients: the BrainX3 use-case*. Frontiers in Neurology, 14. doi:10.3389/fneur.2023.1279875.
- 2023** **Sharma, V.**, Vilarrubias, R. B., & Verschure, P. F. M. J. (2023). *BrainX3: A Neuroinformatic Tool for Interactive Exploration of Multimodal Brain Datasets*. In *Biomimetic and Biohybrid Systems*. doi:10.1007/978-3-031-39504-8_11.
- 2022** Pathak, A., **Sharma, V.**, Roy, D., & Banerjee, A. (2022). *Biophysical mechanism underlying compensatory preservation of neural synchrony over the adult lifespan*. Communications Biology, 5(1). doi:10.1038/s42003-022-03489-4.

WORKSHOPS & TUTORIALS

- 2025** Organising team member and instructor for hands-on demonstrations, Non-Invasive Brain Stimulation (NIBS) Toolkit Workshop, Donders Institute for Brain, Cognition and Behaviour, Radboud University.
- 2024** Participant, Non-Invasive Brain Stimulation (NIBS) Toolkit Workshop, Donders Institute for Brain, Cognition and Behaviour.
- 2022–2023** Tutorial instructor on visualisation and analysis of neurophysiological data, Donders Cognition, Brain, and Technology Summer School (DCBT).

CONFERENCE PRESENTATIONS

- 2026** *Ultrasound Stimulation of Lateral Geniculate Nucleus Modulates Large-Scale Neural Synchrony in Humans.* Organisation for Human Brain Mapping Annual Meeting (OHBM 2026), Bordeaux, France. Poster presentation.
- 2025** *Dynamical Models Reveal Distance to Criticality in Ageing Brain Dynamics.* Dutch Neuroscience Meeting (DNM 2025). Poster presentation.
- 2024** *Understanding Whole-Brain Network Dynamics through Targeted Stimulation and Generative Modeling.* BrainModes Conference 2024. Poster presentation.
- 2023** *Exploring the Post-Stroke Frequency-Mediated Dynamic Repertoire of Brain Activity.* Sion Stroke Recovery Conference (SSRC 2023). Poster presentation.