

PREEYA KHANNA, PhD

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POSITIONS	Univ. of California, Berkeley <i>Assistant Professor:</i> Dept. of Elec. Eng. and Computer Sci., Helen Wills Neuroscience Institute	July 2023 – present
	Univ. of Calif. San Francisco <i>Postdoctoral Fellow:</i> Department of Neurology <i>Advisor:</i> Professor Karunesh Ganguly	May 2018 – June 2023
	University of California, Berkeley <i>Graduate Student:</i> Brain-Machine Interface Lab <i>Advisor:</i> Professor Jose M. Carmena	August 2012 - May 2018
	Cortera Neurotechnologies <i>Consultant:</i> Data Scientist	October 2016 - March 2017
	Neuromodulation Technology, Medtronic PLC <i>Graduate Intern:</i> Biomedical Engineering <i>Advisor:</i> Dr. Timothy Denison	Summer 2015
	Johnson & Johnson <i>Intern:</i> Research and Development Group <i>Advisor:</i> Dr. Russel Walters	Summers 2011, 2012
	Univ. of Pennsylvania <i>BSc:</i> Major in Bioengineering and Mathematics	Aug 2008 – May 2012
HONORS AND AWARDS	Young Investigator Award, Simian Collective (2023) Bioengineering Department Admissions Committee Student Representative (2016-17) Outstanding Graduate Student Instructor for UC Berkeley BioE 101 (Spring 2015) Penn Engineering Exceptional Service Award (2012) Penn Graduation Summa cum Laude (2012)	
CURRENT EXTERNAL RESEARCH SUPPORT	NIH New Innovator Award (2024-2029) Brain Research Foundation Seed Grant (2024-2025) Google Research Scholar Award (2024) Alfred P. Sloan Research Fellowship (2024) Shirley Ryan Ability Labs Pilot Awardee (2024) UC Berkeley Spark Grant Award (2023-2024) UC Berkeley EECS, Helen Wills Neuroscience Institute (2023 - 2028) NIH BRAIN Initiative K99/R00 Postdoctoral Career Transition Award (2021-2026) NIH BRAIN Initiative F32 Postdoctoral Scholar Fellowship (2019-2022) National Science Foundation (NSF) Graduate Research Fellow (2014-2017)	
TEACHING	• UC Berkeley, NEU152: Neurotechnology Co-Instructor • UC Berkeley, BioE171: Neuroethology Guest Lecturer • UCSF, PT419C: Physical therapy research Guest Lecturer	Spring 2025 Spring 2024, Spring 2025 Fall 2019, 2020, 2021, 2022

– Recognized with **Outstanding Graduate Student Instructor Award**

- Neural Data Analysis Workshop Series, April 2018
Designed three 2-hour neural data analysis workshops consisting of i) presentation of material and ii) exercises using ipython notebook code allowing attendees to easily explore concepts. Materials made publicly available on Github .
- Guest Lecturer, EE 290P: Advanced Topics in Bioelectronics, Fall 2017
Led a single 2-hour lecture and discussion with EECS undergraduate and graduate students on using brain-machine interfaces as scientific tools and their translation to the clinic.

PUBLICATIONS

In Preparation:

1. Irasotrza-Landa, N., **Khanna, P.**, Sarasola-Sanz, A., et. al. “A novel brain-machine-interface (BMI) system for motor rehabilitation in a severely impaired chronic stroke patient.”

In Review:

1. **Khanna, P.**, Farrokhi, B.,..., Ganguly, K., ”Separable global and local beta burst dynamics in motor cortex of primates”

Published Journal Articles and Peer-Reviewed Conference Proceedings:

1. Griffin S., **Khanna P.***, et. al. (2025) “Ensemble reactivations during brief rest drive fast learning of sequences” *Nature*. doi: 10.1038/s41586-024-08414-9.
2. Athalye V.R*, **Khanna P.***, Gowda S.R., Orsborn A.O., Costa R.M., and Carmena J.M. (2023) “Invariant neural dynamics drive commands to control different movements” *Current Biology*. doi: 10.1016/j.cub.2023.06.027, *co-authors
3. **Khanna P.***, Oppenheim T.*, Tu-Chan A., Abrams G., Ganguly K. (2023) “Measuring arm and hand joint kinematics to estimate impairment during a functional reach and grasp task after stroke” *Neurorehabilitation and Neural Repair*. doi: 10.1177/15459683231179173, *co-authors
4. Ganguly K., **Khanna P.**, Morecraft R. J., Lin D. (2022) “Modulation of neural co-firing to enhance network transmission and to improve motor function after stroke” *Neuron*. doi: 10.1016/j.neuron.2022.06.024
5. Kondapavulur S., Lemke S.D., Darevsky D., Guo, L., **Khanna P.**, Ganguly, K. (2022) “Transition from predictable to variable motor cortex and striatal ensemble patterning during behavioral exploration.” *Nature communications*. doi: 10.1038/s41467-022-30069-1
6. **Khanna P.**, Totten D., Novik L., Roberts J., Morecraft R.J., Ganguly K. (2021). “Low-frequency stimulation enhances ensemble co-firing and dexterity after stroke.” *Cell*. doi: 10.1016/j.cell.2021.01.023
7. **Khanna P.**, and Carmena J.M. (2017). “Beta Band Oscillations Drive Population Signals that Inhibit Movement in the Motor System.” *ELife* doi: 10.7554/eLife.24573.

• F1000Prime Recommended

8. **Khanna P.**, Swann N. C., Hemptinne C., Miller, A., Starr P. A., and Carmena J.M. (2016). “Volitional Control of Beta Band Power Using the Medtronic Activa PC + S and Nexus-D Streaming.” *IEEE Transactions on Neural Systems and Rehabilitation Engineering*. doi: 10.1109/TNSRE.2016.2597243
9. **Khanna P.**, Athalye V.R., Gowda S., Costa R.M., Carmena J.C. (2016) ”Modeling distinct sources of neural variability driving neuroprosthetic control.” *IEEE Engineering in Medicine and Biology Conference, Orlando*
10. Walters R., **Khanna P.**, Chu M., and Mack M. C. (2016). ”Developmental changes in skin barrier and structure during the first 5 years of life.” *Skin Pharmacol Physiol*, DOI: 10.1159/000444805.

11. **Khanna P.**, Stanslaski S., Xiao Y., Ahrens T., Bourget D., Swann N., Starr P., Carmena J.M., Denison T. (2015). "Enabling Closed-Loop Neurostimulation with Downloadable Firmware Upgrades." *IEEE Biomedical Circuits And Systems Conference*, Atlanta
12. **Khanna P.** and Carmena J.M. (2015). "Neural oscillations: beta band activity across motor networks." *Current Opinion in Neurobiology*, 32: 60-67.
13. **Khanna P.** and Carmena J.M. (2015). "Changes in Reaching Reaction Times Due to Volitional Modulation of Beta Oscillations." *IEEE Neural Engineering Conference*, Montpellier (France).
14. Walters R., **Khanna P.**, Hamilton M., Mays D., and Telofski L. (2015). "Human cumulative irritation tests of common preservatives used in personal care products: a retrospective analysis of over 45,000 subjects". *Toxicological Sciences*. doi:10.1093/toxsci/kfv158
15. **Khanna P.**, So K., and Carmena J.M. (2012). "Volitional phase control of neural oscillations using a brain-machine interface". *IEEE Neural Engineering Conference*, San Diego.
16. **Khanna P.**, Mack M. C., Walczak V. R., Robillard A., Hamilton M. T., Composto J., Martin, K. M., et al. (n.d.). "Human ocular response to instillation of surfactant solutions and water across 10, 000 subjects". In Proc. *ALTEX 8th World Conference*, p127 - 132.
17. Bark K., **Khanna P.**, Irwin R., Kapur P., Jax S., Buxbaum L., Kuchenbecker KJ., (2011). "Lessons in using vibrotactile feedback to guide fast arm motions". In Proc. *IEEE World Haptics Conference*. p355 - 360.

Patents:

1. Athalye, V., **Khanna P.**, Carmena, J.C., Costa, R.M., Systems and Methods for Modeling and Decoding Neural Activities., Provisional patent filed Mar 17, 2023
2. Ganguly K., **Khanna P.**, Kim, K. Methods and Apparatuses for Treating Stroke Using Low Frequency Stimulation. PCT/US2022/015876. Published Aug 18, 2022

INVITED TALKS

1. June 2025, Columbia University, New York, NY
2. April 2025, University of Oregon, Eugene, OR
3. December 2024, UC Berkeley EECS Colloquium, Berkeley, CA
4. November 2023, UC Berkeley Cortex Club, Berkeley, CA
5. September 2023, UC Berkeley Semiautonomous Seminar, Berkeley, CA
6. September 2023, Simian Collective Conference, Chicago, IL
7. October 2022, UC Berkeley Neuroscience Retreat, Asilomar, CA
8. October 2022, India Institute of Sciences, Bangalore, IN
9. March 2022, University of California, Davis, Davis, CA
10. February 2022, University of California, Berkeley, virtual
11. March 2021, Wisconsin Institute for Translational Neuroengineering (WITNE), virtual
12. February 2021, Computational and Systems Neuroscience (COSYNE), virtual, 4.6 percent of submissions accepted for talk
13. December 2019, Center for Neural Engineering and Prostheses annual retreat, University of California, Berkeley
14. December 2018, Center for Neural Engineering and Prostheses annual retreat, University of California, San Francisco
15. May 2018, Columbia University, New York, NY
16. April 2018, Max Planck Institute for Intelligent Systems, Stuttgart, Germany
17. April 2018, University of Tübingen, Tübingen, Germany

18. March 2017, FDA Experiential Learning Program (ELP) at Medtronic – I was one of the seven presenters invited to Medtronic headquarters for a two-day session designed to educate the FDA on future uses of neural interface technologies
19. August 2016, IEEE Engineering in Medicine and Biology Society Conference, Orlando, FL
20. December 2015, Center for Neural Engineering and Prostheses annual retreat, University of California Berkeley
21. October 2015, Live Demo Session: IEEE Biomedical Circuits and Systems Conference, Atlanta, GA.
22. October 2015, IEEE Biomedical Circuits and Systems Conference, Atlanta, GA.
23. October 2015, Bioengineering Annual Retreat and Conference, Asilomar, CA.
24. March 2015, UC Berkeley Cortex Club, Berkeley, CA.
25. October 2014, Undergraduate Cognitive Science Association, University of California, Berkeley.