Pankaj K. Gupta

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EDUCATION

Graduate Program in Neuroscience(PhD.) *UBC*, Vancouver, Canada. *2018 - 2024(expected)*
M.Sc. Interactive Entertainment Tech. (CS) (GPA: 3.2) *Trinity College Dublin*, Ireland *2011 - 2012*
B.E. Computer Engineering (GPA: 3.1) *Army Institute of Technology, University of Pune*, Pune, India *2004 - 2008*

SUMMER COURSES

Summer Workshop on the Dynamic Brain (Allen Institute; U. Wash., USA) *Aug 2021*
(TA)Neuromatch Academy 2020, 2021 (held online, world-wide) *Aug. 2020, July 2021*
CNEURO 2020: Theoretical and Computational Neuroscience (Tsinghua University, China) *Aug 2020*
(TA)Frontiers in Neurophotonics Summer School (Université Laval, Canada) *Aug 2020*
Methods in Neuroscience at Dartmouth (Dartmouth College, USA) *Jul - Aug 2018*
Translational Neuroscience and Neural Engineering (Brown Uni. & EPFL) *June 2018*
Computational Approaches to Memory and Plasticity (NCBS, Bangaluru, India) *Jul - Aug 2017*

PUBLICATIONS

(In review) Gupta, P., Murphy, T. (2024)"**Real-Time Closed-Loop Feedback System For Mouse Mesoscale Cortical Signal And Movement Control: CLoPy**" *TBD*

T Fong, H Hu, P Gupta, B Jury, TH Murphy (2023)"**PyMouseTracks: flexible computer vision and RFID-based system for multiple mouse tracking and behavioral assessment**" *eneuro 10 (5)*

Bolaños, L. A., Xiao, D., Ford, N. L., LeDue, J. M., Gupta, P. K., Doebeli, C., Hu, H., Rhodin, H., Murphy, T. H. (2021). "**A three-dimensional virtual mouse generates synthetic training data for behavioral analysis**" *Nature Methods, 18(4), 378–381*

Gupta, P., Murphy, T. (2021)"**Real-time neural feedback of mesoscale cortical GCAMP6 signals for training mice**" *Computational and Systems Neuroscience (Cosyne) 2021, 2-118*

Hart et. al. (2021)"**Neuromatch Academy: a 3-week, online summer school in computational neuroscience**" *Journal of Open Source Education*

Amso, D., Govindarajan, L.N., Gupta, P., Baumgartner, H., Lynn, A., Gunther, K., Placido, D., Sharma, T., Veerabadran, V., Thakkar, K., Kim, S. Serre, T. (2021)"**Using Computational Analysis of Behavior To Discover Developmental Change In Memory-Guided Attention Mechanisms In Childhood**"

Freier, L., Gupta, P., Badre, D., Amso, D. (2020)"**The value of choice in 3- to 7-year-olds' use of working memory gating strategies in a naturalistic task**" *Developmental Science (DS-05-19-0224-P)*

Forys, B. J., Xiao, D., Gupta, P., Murphy, T. H. (2020). "**Real-time selective markerless tracking of forepaws of head fixed mice using deep neural networks**" *Eneuro, ENEURO.0096-20.2020*

Gupta, P.K., and Murphy, T.H. (2019). "**Cortex-wide Computations in Complex Decision Making in Mice**" *Neuron 104, 631–633*

Drew Linsley, Sven Eberhardt, Tarun Sharma, Pankaj Gupta, Thomas Serre "**What are the visual features underlying human versus machine vision?**" *Proceedings of the IEEE CVPR 2017*, 2706-2714

Abdur-Rahim, J., Morales, Y., Gupta, P., Umata, I., Watanabe, A., Even, J., ... Ishii, S. (2016). "**Multi-sensor based state prediction for personal mobility vehicles**" *PLoS ONE, 11(10)*

Ogawa, T., Hirayama, J. I., Gupta, P., Moriya, H., Yamaguchi, S., Ishikawa, A., ... Ishii, S. (2015). "**Brain-machine interfaces for assistive smart homes: A feasibility study with wearable near-infrared spectroscopy**" *Proc. of the IEEE EMBS*, 1107-1110

Ogawa T, Gupta KP, Yano K, Abdur-Rahim JA, Morioka H, Hirayama J, Yamaguchi S, Ishikawa A, Inoue Y, Kawanabe M, Ishii S. "**Decoding daily behaviors from NIRS signatures by using a portable NIRS device in the daily-life environment**" *Society for Neuroscience 2014*, Washington DC, USA, November 2014

Ogawa T, Gupta KP, Yano K, Abdur-Rahim JA, Morioka H, Hirayama J, Yamaguchi S, Ishikawa A, Inoue Y, Kawanabe M, Ishii S. "**Decoding daily-life behavioral signatures in the real environment: portable NIRS signal using behavior labels**" *37th Japan Neuroscience Society*, Yokohama, Japan, September 2014

SELECTED PRESENTATIONS

"**Real-time feedback of cortical activity and specific body movements in mice**" *NeuroAI-Seattle 2024*
"**Platform for real-time closed-loop feedback of behavior and cortical GCaMP activity in mice**" *Nanosymposium, Society for Neuroscience 2023*
"**Modeling multi-region cortical interactions using task-specific data-constrained recurrent neural networks**" *Lake Conference 2023*
"**Real-time neural feedback of mesoscale cortical GCAMP6 signals for training mice**" *Computational and Systems Neuroscience (Cosyne) 2021, 2-118*
"**What classic neuroscience result would you revisit with a BMI?**" *Annual Symposium 2019, SWC, UCL*

EXPERIENCE

Graduate Student Neurodata Tutor- *UBC Dynamic Brain Circuits cluster* *Mar. 2020 - current*
Teaching Assistant- *Summer Workshop on the Dynamic Brain (2022)*, Friday Harbor, USA *Aug. 2022 - Sep. 2022*
Lead Teaching Assistant- *UBC Neuroscience NRSC-501(2021W) course* *Dec. 2020 - May 2021*
Teaching Assistant- *NeuroMatchAcademy (2020, 2021) Summer School*, held online *Aug. 2021, July 2020*
Teaching Assistant- *Frontiers in Neurophotonics Summer School*, Quebec City, Canada *June 2019*
Research Assistant- *Brown University*, Providence, RI, USA *Oct. 2015 - Jun. 2018*
Research Engineer- *ATR International*, Kyoto, Japan *Dec. 2012 - Jul. 2015*
Intern (M.Sc. Thesis)- *ATR International*, Kyoto, Japan *May 2012 - July 2012*
Sr. Software Developer- *Propalms Network Pvt. Ltd.*, Pune, India *Dec. 2008 - Aug. 2011*
Associate Software Developer- *GlobalLogic*, Noida, India *Aug. 2008 - Dec. 2008*

SKILLSET

Concepts: Optogenetics, Calcium imaging, Electrophysiology, Near Infra-red Spectroscopy, Signal processing; Supervised and Unsupervised Machine Learning; Statistics; Linear Algebra; Computer Vision; Augmented Reality; Computer Network Programming;
Programming env.: Python; Matlab; C; C++; C#; OpenCV; OpenGL; Windows; Linux

COMMUNITY/EXTRACURRICULAR WORK

- Co-chair, **Canadian Partnership for Stroke Recovery (CPSR) National Trainee Association**
- Member, **Diversity Mentorship Program**, UBC
- Editor and Communications Manager at **Neuropsyched.ca**, a UBC-student run science magazine
- Science communicator at the **Science World** , Vancouver
- Added support for non-Admin users of **OpenVPN** client on Windows platform

AWARDS

- CPSR 180 Pitch Competition, second place
- LLMs for Brain Health 2023 hackathon winner
- AccelNet IN-BIC fellowship 2021, 2022
- CCN 2022 conference award (Simons Foundation)
- Frontiers in Neurophotonics 2021 presentation winner
- Student choice award for project at SWDB 2021
- Brain-Tech 2021 hackathon winner
- DMCBH Neural Repair Endowment 2021
- Edward Squires Memorial Fellowship 2020
- **MIT GrandHack2016** healthcare at home award
- **SAMSUNG BADA** codeathon 2011 winner

REFERENCES

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