Sahar Sattari

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Education

PhD in Biomedical Engineering, University of British Columbia, Canada	2023 – Present
MASc in Biomedical Engineering, University of British Columbia, Canada	2021 – 2023
BASc in Electrical Engineering, Sharif University of Technology, Iran	2016 – 2020

Skills

Python (PyTorch, Scikit-Learn, Pandas, Seaborn), Git, MATLAB

Experience

Brain-Computer Interface Intern, Myelinz – United Kingdom   Spring 2024

- Developed pipelines to process multi-modal sensor data (IMU, EEG, PPG), enabling real-time integration into gameplay.
- Built a performance-tracking dashboard for cognitive games using physiological signal visualizations to support caregiver interpretation.
- Collaborated with game designers to translate data insights into improved mental health intervention criteria.

Graduate Research Assistant, UBC – Canada   2021 – Present

- Modeled latent brain state dynamics using spherical mixture modeling, identifying distinct spatiotemporal EEG signatures that are associated with cognitive performance metrics (PhD research).
- Developed a Generalized Eigenvalue Decomposition framework for dimensionality reduction, effectively isolating task-relevant neural components and increasing the SNR for high-dimensional EEG time series (PhD research).
- Quantified directed information flow in social dyadic interactions by applying information-theoretic metrics to EEG data, uncovering novel causal connectivity patterns between participants (MASc thesis).
- Performed wavelet-based analyses to study brain evoked responses linked to spontaneous eye blinks.
- Architected a real-time closed-loop system integrating MATLAB Mobile and wearable sensors to detect and mitigate Freezing of Gait; successfully translated research into a functional app prototype for Parkinson's patient intervention.

Teaching Assistant, UBC and Sharif University of Technology   2018 – Present

- Supervised and mentored capstone projects. Led lab sessions, developed course materials, and graded assignments. Supported courses in biomedical engineering, wearable systems, biosensors, mathematics, and statistical methods.

Undergraduate Researcher, Sharif University of Technology – Iran   2019 – 2020

- Applied ensemble and weighted feature fusion techniques on EEG and ECG data, improving emotion recognition accuracy by 5%.

Publications

- **Sattari, S.**, Virji-Babul, N., & Wu, L. C. (2025). *Contrast-based artifact removal enables microstate analysis in ambulatory EEG. IEEE Transactions on Biomedical Engineering*. doi: 10.1109/TBME.2025.3630112.

- McLeod, J., Thanjavur, K., **Sattari, S.**, Babul, A., Hristopulos, D. T., & Virji-Babul, N. (2025). *Linking a Deep Learning Model for Concussion Classification with Reorganization of Large-Scale Brain Networks in Female Youth. Bioengineering, 12*(9), 986. doi: 10.3390/bioengineering12090986.

- Damji, S., **Sattari, S.**, Zadravec, K., Campbell, K. L., Brunet, J., & Virji-Babul, N. (2025). *Changes in EEG Microstate Dynamics and Cognition Post-Chemotherapy in People With Breast Cancer. Brain and Behavior, 15*(3), e70335.

- **Sattari, S.**, Damji, S., McLeod, J., Mirian, M. S., Wu, L. C., & Virji-Babul, N. (2024). *Altered resting state EEG microstate dynamics in acute-phase pediatric mild traumatic brain injury*. [Under revision] at *PLOS ONE* (Preprint available at medRxiv).

- McLeod, J., Chavan, A., Lee, H., **Sattari, S.**, Kurry, S., Wake, M., Janmohamed, Z., Hodges, N. J., & Virji-Babul, N. (2024). *Distinct Effects of Brain Activation Using tDCS and Observational Practice: Implications for Motor Rehabilitation*. *Brain Sciences, 14*(2), 175.

- **Sattari, S.**, Kenny, R., Liu, C. C., Ghosh Hajra, S., Dumont, G. A., & Virji-Babul, N. (2023). *Blink-related EEG oscillations are neurophysiological indicators of subconcussive head impacts in female soccer players: A preliminary study*. *Frontiers in Human Neuroscience, 17*, 1208498.

Awards

SBME Entrance Award (2023)
NSERC CREATE Care Anywhere (2023)
Design for People Scholarship (2021–2022)

Languages

Persian: Native   **English:** Advanced (TOEFL iBT: 113)

References

PhD Supervisor: Dr. Lyndia Wu (lwu@mech.ubc.ca)
Co-Supervisor: Dr. Naznin Virji-Babul (naznin.virji-babul@ubc.ca)