# Dr. Saurabh Bhaskar Shaw

**Data Scientist**
**Translational Neuroscientist**
**Neurotech Enthusiast**


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## EXPERIENCE

### MITACS Post-doctoral Fellow
**Homewood Research Institute & Western University**
November 2020 – Ongoing  Department of Psychiatry

Bridging the divide between researchers & clinicians by identifying clinical neuromarkers of post-traumatic stress disorder (PTSD), aiming to improve diagnosis and treatment of such psychological disorders.

### Post-graduate Affiliate
**Vector Institute**
April 2020 – Ongoing  Toronto, ON

Research merit-based induction into Vector's AI community, leading to engagements & collaborations with other AI researchers.

### Co-Founder & Co-Director
**Neurotech Hamilton**
June 2017 – Ongoing  Hamilton, ON

Co-founded NeuroTech Hamilton (NeuroTechHA), a non-profit with a mission to facilitate neurotechnology advancement by bringing together research & industry. This community has grown to 300+ clinicians, neuroscientists, engineers, & neurotech enthusiasts, fostering collaboration through workshops, events and a major hackathon.

### Co-Founder
**Serenity Systems**
September 2013 – Ongoing  Hamilton, ON

Designed a tactile navigation system for the visually impaired to explore novel environments independently & performed validation testing, assessing efficacy against current competitors (published results).

### NSERC Summer Research Scholar
**McMaster University**
2012, 2013, 2014  Hamilton, ON

Three-time award recipient, facilitated work on neuroimaging research projects to improve signal processing in collaboration with industry partners (InteraXon).

### Teaching Assistant
**Various Departments**
2013 – 2020  Hamilton, ON

Co-taught & managed a wide range of courses, from the undergraduate-level calculus and Anatomy & Physiology, to graduate-level machine learning courses, catering technical material to students from a wide range of academic backgrounds.

## NOTABLE ACHIEVEMENTS

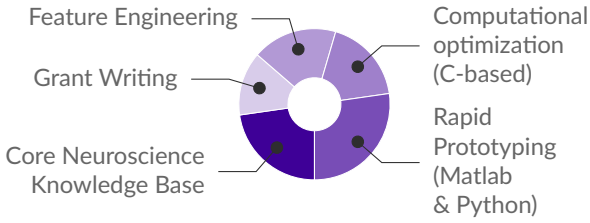
**Designed novel ML pipeline for detecting EEG-based brain networks** to allow its use as cost-effective biomarkers in psychiatry & in Brain Computer Interfaces (BCIs).

**Validated clinical applications** by testing pipeline's ability in detecting therapy-linked brain network changes in youth & PTSD patients.

**Received numerous grants & awards** totaling to 1.5M for projects & initiatives aimed at democratizing access to neurotechnologies in clinical & community settings.

**Have great networking & interdisciplinary communication skills** honed through supervising 15 research thesis & engineering students, hosting neurotech events & delivering conference talks.

## TECHNICAL SKILLS




*Pie-share represents familiarity & daily use

## EDUCATION

### Ph.D in Neuroscience
**McMaster University**
Sept 2016 – July 2021

### M.A.Sc. in Biomedical Engineering
**McMaster University**
Sept 2014 – August 2016

### B.Eng. in Electrical & Biomedical Eng.
**McMaster University**
Sept 2010 – June 2014

# NOTABLE GRANTS & AWARDS

**Phase 1 & 2 IDEaS Grant**
Highly competitive grant awarded by Defence Research and Development Canada to study problems faced by Canadian Armed Forces, & trial possible solutions.

**MITACS Elevate Post-doctoral Fellowship**
Postdoctoral fellowship designed for collaborative projects bridging industry and academia.

**NSERC Discovery Grant**
Competitive long-term grant to support research in science & engineering.

# PUBLICATIONS

## Journal Articles

- Bharadwaj, Arnav, Saurabh Bhaskar Shaw, and Daniel Goldreich (2019). "Comparing tactile to auditory guidance for blind individuals". In: *Frontiers in human neuroscience* 13, p. 443.
- Kumbhare, Dinesh, Saurabh Shaw, Sara Ahmed, et al. (2020). "Quantitative ultrasound of trapezius muscle involvement in myofascial pain: comparison of clinical and healthy population using texture analysis". In: *Journal of ultrasound* 23.1, pp. 23–30.
- Kumbhare, Dinesh, Saurabh Shaw, Liza Grosman-Rimon, et al. (2017). "Quantitative ultrasound assessment of myofascial pain syndrome affecting the trapezius: a reliability study". In: *Journal of Ultrasound in Medicine* 36.12, pp. 2559–2568.
- Rathbone, Alasdair, Saurabh Bhaskar Shaw, and Dinesh Arun Kumbhare (2015). "ICC.Sample.Size: An R package for calculating sample size and power for studies utilizing the Intra-Class Correlation Coefficient". In: *CRAN*.
- Shaw, Saurabh Bhaskar (2016). "A Novel Framework Using Brain Computer Interfacing & EEG Microstates To Characterize Cognitive Functionality". In: *MacSphere*.
- – (2021). "Towards EEG-based biomarkers of large scale brain networks". In: *MacSphere*.
- Shaw, Saurabh Bhaskar, Kiret Dhindsa, et al. (2019). "Capturing the forest but missing the trees: Microstates inadequate for characterizing shorter-scale EEG dynamics". In: *Neural computation* 31.11, pp. 2177–2211.
- Shaw, Saurabh Bhaskar, Yarden Levy, et al. (2021). "Combining Aerobic Exercise and Mindfulness-like Neurofeedback (NFB) for better Intrinsic Connectivity Network (ICN) Synchrony". In: *TOWARDS EEG-BASED BIOMARKERS OF LARGE SCALE BRAIN NETWORKS*, p. 146.
- Shaw, Saurabh Bhaskar, Margaret C McKinnon, Jennifer J Heisz, et al. (2021). "Tracking the Brain's Intrinsic Connectivity Networks in EEG". in: *bioRxiv*.
- Shaw, Saurabh Bhaskar, Margaret C McKinnon, Jennifer Heisz, et al. (2021). "Dynamic task-linked switching between brain networks–A tri-network perspective". In: *Brain and cognition* 151, p. 105725.
- Shaw, Saurabh Bhaskar, Andrew Nicholson, et al. (Submitted). "Increased top-down control of emotion after alpha-down neurofeedback in PTSD - a randomized control trial". In: *Neuroimage:Clinical*.
- Terpou, Braeden et al. (Submitted). "EEG Microstates in PTSD: Identifying resting-state dynamics and classifying PTSD using machine learning". In: *Neuroimage:Clinical*.

# CONFERENCES

## Conference Proceedings

- R.Saab et al. (2016). "MyFractal: An EEGLab plugin for the fractal analysis of electroencephalography data". In: *Human Brain Mapping 2016*, p. 1786.
- S.B.Shaw (2017). "Real-Time Filtering of Gradient Artifacts from Simultaneous EEG-fMRI Data". In: IEEE PRNI.
- S.B.Shaw, A. Akbari, and M.D. Noseworthy (2013). "Attenuation of Contaminating PCr Signal in Human Liver 31P MRS Using Ferromagnetic Mats". In: *Book of Abstracts ESMRMB 2013*. 26(1): MAGMA, pp. 272–273.
- S.B.Shaw, J.F. Connolly, and M.D. Noseworthy (2016). "Scattering Wavelet Representation of fMRI BOLD data". In: *Proceedings of 14th ImNO 2016*, p. 213.
- S.B.Shaw, J. Dhillon, et al. (2014). "SERENITY: Tactile Navigation System for the Visually Impaired". In: *CNIB Conference 2014*.
- S.B.Shaw, K. Dhindsa, C. Dematteo, et al. (2015). "Fractal dimensionality of BOLD signal as a measure of mild traumatic Brain injury (mTBI)". in: *Book of Abstracts ESMRMB 2015*. 28(1): MAGMA, S121–S122.
- S.B.Shaw, K. Dhindsa, J. Reilly, et al. (2019). "Capturing the forest but missing the trees: Microstates inadequate for characterizing shorter-scale EEG dynamics". In: Canadian Association for Neuroscience (CAN).
- S.B.Shaw, D. Kumbhare, and M.D. Noseworthy (2016). "Comparison of Spatial Anisotropy Measures from Ultrasound Imaging to Diffusion Tensor Imaging Based Measures". In: *Book of Abstracts ESMRMB 2016*. MAGMA.
- S.B.Shaw, Margaret McKinnon, et al. (2018). "Characterization of EEG signatures of DMN, CEN and SN network activity in simultaneously recorded EEG-fMRI during multiple memory tasks". In: Toronto Area Memory Group (TAMEG) Spring 2018 Meeting.
- Y.Levy et al. (2019). "Examining the effects of aerobic exercise on mood, cognition, and neural networks". In: Toronto Area Memory Group (TAMEG) Spring 2019 Meeting.

# REFERENCES

Available upon request