Shanaathanan Modchalingam

PhD Candidate and VR Research Lead

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Toronto, Canada

EXPERIENCE

Visiting Researcher (Remote) | Computational Neuroscience,
Group for Theoretical Neuroscience, The Philipps University of Marburg
08/2021 – present

- Developed, optimized, and compared neuroscience-informed machine learning models of contextual inference during human motor learning
- Focus: Non-parametric Bayesian models and time-series analysis of motor performance and perceptual input

PhD Candidate | Sensation, Perception, and Motor Learning,
Sensorimotor Control Lab, Centre for Vision Research, York University
09/2016 – present

Project Lead: Experimental Framework in Immersive VR

- Planned, secured funding for, and established a prolific research program aligned with research goals of the laboratory
- Led a team of 3 developers creating hardware and software tools to best employ immersive VR for motor learning research
- Facilitated multiple research projects at all academic levels (Undergraduate, Masters, PhD, Postdoctoral)
- Designed, developed, and refined intuitive measures and aides for research (e.g. gaze-based localization of limbs in space, custom hardware, surveying tools)

Researcher

- Dissertation focus: maximizing implicit and intuitive motor learning in dynamic virtual environments
- Published findings in peer-reviewed scientific journals and presented findings at multiple international conferences

Leadership and Committees

- Represented 300+ trainee-level researchers in multiple institutional and international leadership and funding groups
- Secured funding for innovation, industry and academic collaboration, and travel for graduate researchers

Teaching | Motor Learning, Statistics and Physiology,
Department of Health, York University
09/2016 – present

Lecturer and Course Director: Human Motor Learning

- Designed and delivered a research focused undergraduate-level course
- Mentored undergraduate students through designing, executing, and communicating neuro-motor learning experiments
- Taught undergraduate students fundamentals of statistics

SELECT PUBLICATIONS

External error attribution dampens efferent-based predictions but not proprioceptive changes in hand localization.
Gastrock RQ, Modchalingam S, 't Hart BM, Henriques DYP. Scientific Reports. 2020;10. https://doi.org/10.1038/s41598-020-76940-3

The effect of age on visuomotor learning processes.
Vachon CM, Modchalingam S, 't Hart BM, Henriques DYP. PLOS ONE. 2020;15(9). https://doi.org/10.1371/journal.pone.0239032

The effects of awareness of the perturbation during motor adaptation on hand localization.
Modchalingam S, Vachon CM, 't Hart BM, Henriques DYP. 2019. PLOS ONE. 2019;14(8). https://doi.org/10.1371/journal.pone.0220884

EDUCATION

PhD Candidate - Sensorimotor Neuroscience - Health,
York University
present

MSc - Sensorimotor Neuroscience - Health, *York University*
2018

SKILLS

Machine Learning and Data Science
- Python (PyTorch, TensorFlow, Pandas, Numpy, SciPy)
- R (Stan, Tidyverse, Shiny)
- MATLAB

Software Development
- Unity 3D (C#)
- Python (PsychoPy)
- R (Shiny)

Project Management
- Agile, Kanban, Trello
- Git, Github

Human-Computer Interaction
- Hardware and software design and prototyping
- User testing and quality control

Research
- Human-focused motor learning
- Immersive virtual reality
- Qualitative and quantitative methods: surveys, psychophysical, and physiological measures

Databases
- SQL Server, MySQL
- Open Science Framework

AWARDS

2020 – 2022 | NSERC Postgraduate Scholarship - Doctoral

2018 – 2022 | VISTA Graduate Scholarship - Doctoral

2018 - 2021 | NSERC CREATE "Brain in Action" International Training

TRAINING AND INTERESTS

Implicit Bias and EDI Training
York University

Computational Neuroscience
Neuromatch Academy

XR for Research
York University

Coordinator and Competitor
York University Starcraft 2 Team: 2012 - 2014