Shanaathanan Modchalingam

PhD Candidate and VR Research Lead

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EXPERIENCE

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

Project Lead: Experimental Framework in Immersive VR
- Led a team of 3 developers creating hardware and software tools to best employ immersive VR for motor learning research
- Worked with Principal Investigators to design and establish a research program aligned with global research goals of the laboratory
- Successfully completed multiple research projects at all academic levels (Undergraduate, Masters, PhD, Postdoctoral)
- Successfully navigated CoViD-19 guidelines to conduct safe human-focused tool development and research

Graduate Researcher
- Dissertation focus: the interplay between conscious and unconscious motor learning, and maximizing, implicit, intuitive human motor learning; includes experiment design, development, data analysis, and computational modeling work
- Published findings in peer-reviewed scientific journals

Visiting Researcher | Computational Neuroscience,
Group for Theoretical Neuroscience | The Philipp University of Marburg
08/2021 – present
- Developed and compared neuroscience-informed machine learning models of contextual inference when moving in new environments

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

Lecturer and Course Director: Human Motor Learning
- Designed and delivered an applied-research focused 4th-year university-level course
- Mentored undergraduate students through designing, executing, and communicating neuro-motor learning research

Teaching Assistant
- Human Physiology: Instructed applied fundamentals of collecting electrophysiological and biological data
- Statistics: Instructed fundamentals of data analysis and statistics

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

Unbounded implicit motor adaptation.
Modchalingam S, Ciccone M, 't Hart, BM, and Henriques DYP. 2020. Neuromatch 2, Online Conference, Talk

EDUCATION

PhD - Sensorimotor Neuroscience - Kinesiology and Health Science,
York University
present

MSc - Sensorimotor Neuroscience - Kinesiology and Health Science,
York University
2018

SKILLS

Programming
- Statistical programming, machine learning and data visualization: Python (PyTorch, Numpy), R, and MATLAB
- Experiment and scientific tool development: Unity, C#, Python (PsychoPy), and R (shiny)

Research and Scientific Measurements
- Participant-focused experiment design
- Human-focused qualitative and quantitative measures: surveys, behavioural, psychophysical, and physiological measures

Human-Computer Interactions
- Development of researcher and participant-focused research tools
- Human-focused hardware and software development

Leadership and Program Management
- Lead for project involving large team of programmers and researchers
- Elected member in multiple leadership committees representing 300+ trainees
- Voting member of multiple hiring and organizing committees

Databases
- Maintained database for scientific data analysis using SQL Server and MySQL
- Published cleaned and anonymized datasets on Open Science Framework

AWARDS

2020 – 2022 | NSERC Postgraduate Scholarship - Doctoral, *$23000/year*

2018 – 2022 | VISTA Graduate Scholarship, *$10000/year*

2018 - 2021 | NSERC CREATE IRTG 'Brain in Action' Program, *$15000/year*

ADDITIONAL TRAINING

Implicit Bias and EDI Training
York University

Computational Neuroscience
Neuromatch Academy

EEG Measurement and Analysis
University of Western Ontario Brain and Mind Institute, The Philipp University of Marburg

XR for Research
York University