Spencer A. Arbuckle, PhD

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SELECTED PROFESSIONAL & RESEARCH EXPERIENCE

Public Health Data Analyst, Innovation Secretariat — 2022–present
Centre for Population Health Data, Statistics Canada

Neurotechnology Course Developer, Centre for Neuroscience Studies — 2022–present
Queen's University (Canada)

Computational Neuroscientist, Brain and Mind Institute — 2016–22
Western University (Canada)

Research Technician, Brain and Mind Institute — 2015–16
Western University (Canada)

Undergraduate Thesis Student, Department of Psychology — 2013–14
Queen's University (Canada)

Research Assistant, Department of Psychology — 2012–13
Queen's University (Canada)

Unit Assistant, Federal Student Work Experience Program — 2012
Correctional Service of Canada

EDUCATION

PhD, Computational Neuroscience, Advisors: Jörn Diedrichsen & J Andrew Pruszynski — 2016–21
Schulich School of Medicine & Dentistry, Western University (Canada)

BSc (Hons.), Psychology, Research Advisor: Ingrid Johnsrude — 2010–14
Dept. of Psychology, Queen's University (Canada)

PUBLICATIONS [google scholar profile]

SA Arbuckle, JA Pruszynski, J Diedrichsen (2022). Mapping the integration of sensory information across fingers in human sensorimotor cortex. *Journal of Neuroscience* (42).

SA Arbuckle (2021). Brain representations of dexterous hand control: Investigating the functional organization of individuated finger movements and somatosensory integration. *PhD Thesis*.

AS Fox, D Holley, PC Klink, **SA Arbuckle**, CA Barnes, J Diedrichsen, SC Kwok, C Kyle, JA Pruszynski, J Seidlitz, X Zhou, RA Poldrack, KJ Gorgolewski (2021). Sharing voxelwise neuroimaging results from rhesus monkeys and other species with Neurovault. *NeuroImage* (225).

SA Arbuckle, Weiler J, Kirk EA, Rice CL, Schieber MH, Pruszynski JA, Ejaz N, Diedrichsen J. (2020) Structure of population activity in primary motor cortex for single finger flexion and extension. *Journal of Neuroscience* (40).

SA Arbuckle, A Yokoi, JA Pruszynski, J Diedrichsen (2019). Stability of representational geometry across a wide range of fMRI activity levels. *NeuroImage* (186).

A Yokoi, **SA Arbuckle**, J Diedrichsen (2018). The role of human primary motor cortex in the production of skilled finger sequences. *Journal of Neuroscience* (38).

J Diedrichsen, A Yokoi, **SA Arbuckle** (2018). Pattern Component Modeling: A flexible approach for understanding the representational structure of brain activity patterns. *NeuroImage* (180).

C Lambert, **SA Arbuckle**, R Holden (2016). The Marlow-Crowne Social Desirability Scale outperforms the BIDR Impression Management Scale for identifying fakers. *Journal of Research in Personality* (61).

FUNDING

Ontario Micro-credentials Challenge Fund, Community Impact Award
Neurotechnology Micro-credential Program.
Amount: $973,563 Dates: 2022–23 Agency: Ontario Gov. Role: **Collaborator**

NSERC Postgraduate Doctoral Scholarship
Does functional hand use predict how hand control is organized?
Amount: $63,000 Dates: 2018–21 Agency: NSERC Role: **Project Lead**

Brain & Mind Institute, Collaborative Research Grant
Cortical representations of finger flexion & extension movements.
Amount: $2,300 Dates: 2017–18 Agency: Western Uni. Role: **Co-applicant**

AWARDS & HONOURS

Western University Neuroscience Research Day top poster award	2020
DPZ Primate Systems Neuroscience Summer School Travel Award	2019
NSERC Postgraduate Doctoral Scholarship	2018–21
Ontario Graduate Scholarship (*declined*)	2018–19
Western University Neuroscience Conference Travel Award	2017
Computational Sensorimotor Neuroscience Summer School – Best project	2017
Brain Canada Travel Scholarship	2017
Queen's University Dean's Honour List	2013–14
Queen's University Academic Excellence Entrance Scholarship	2010
University of Winnipeg Special Entrance Scholarship (*declined*)	2010

COMPETITIVE RESEARCH COURSES & WORKSHOPS

Business & Consulting Seminar Series, Western GMCA (Canada)	2022
Representational Similarity Analysis 3.0 Workshop, Collingwood (Canada)	2019
Primate Cognitive Neuroscience Summer School, DPZ (Germany)	2019
Computational Sensorimotor Neuroscience Summer School, Uni. of Minnesota, (USA)	2017

TEACHING

Ten years of teaching-related experience. A curated selection follows:

Neurotechnology micro-credentials – **course development lead**	Queen's Uni.	2022–present
Intro to Neural Networks (undergrad & graduate) – **material & lectures**	Western Uni.	2020–22
Intro to Data Science (undergrad & graduate) – **teaching assistant (TA)**	Western Uni.	2020–21
Analysis of Neural Population Dynamics (workshop) – **co-organizer**	Western Uni.	2019
Computational Core Methods Lunches (workshops) – **regular presenter**	Western Uni.	2018–21
Computer Science Information Systems (undergrad) – **TA**	Western Uni.	2017
Statistics for Science (undergrad) – **TA**	Western Uni.	2016
Intro to Statistics (undergrad) – **TA**	Western Uni.	2016
Principles of Psychology (undergrad) – **TA**	Queen's Uni.	2012–14

MENTORSHIP

Master's Thesis of Deepanshu Wadhwa. Western University (Canada) [link] 2019–21
A generative-discriminative approach to human brain mapping.
Master's Thesis of Megha Verma. Western University (Canada) [link] 2018–20
Evaluating anesthetic protocols for non-human primate functional neuroimaging.

OUTREACH & SERVICE

Project Lead – Canadian Science Policy Centre, Reports Committee	[link]	2022–present
Contributor – Canadian Neuroscience Association's science funding page	[link]	2022
Neuro-advocate – Canadian Neuroscience Association's Parliament Hill Week	[link]	2022
Internal Reviewer – Linguistics Graduate Program Review (Western Uni.)	[link]	2021
Co-Organizer – Neural Dynamics Workshop (Western Uni.)	[link]	2019
Presentation Mentor – weekly Presentation Skills Workshop (Western Uni.)		2019–21
Judge – Thames Valley Science & Engineering Fair		2017–18, 20
Council Chair – Queen's University Psychology Undergraduate Student Council		2011–14
Invited Reviewer – Journal of Neurophysiology, NeuroImage		
Grant Reviewer – Swiss National Science Foundation		

MEDIA COVERAGE

Featured Research article highlight in the Journal of Neuroscience	[link]	2022
Contributor to the Canadian Neuroscience Association's Science Funding page	[link]	2022
Research featured in The Dorsal Column (Ontario-based science publication)	[link]	2019
Radio interview about my research with CHRW 94.9FM Gradcast radio show	[link]	2018

INVITED TALKS

How to give short and effective science talks. 10/2021
Society for Neuroscience Graduate Students, Western University (Canada)

Cortical contributions in human hand control. 11/2020
Be.Neuro Lab, Dept. of Bioengineering, Imperial College London (UK).

Can fMRI be used to make inferences on neural representations? 03/2018
Dept. of Cognitive, Linguistic, & Psychological Sciences, Brown University (USA).

An introduction to pattern component modeling. 04/2017
BLAM Lab, Dept. of Neurology, Johns Hopkins University School of Medicine (USA).

CONFERENCE TALKS

SA Arbuckle, JA Pruszynski, J Diedrichsen (2020). Integration of tactile information from multiple fingers in human primary sensory cortex measured using high-resolution fMRI. Annual Robarts Research Retreat, London (Canada).

SA Arbuckle, J Weiler, EA Kirk, M Saikaley, C Rice, M Schieber, J Diedrichsen, N Ejaz (2018). Representation of fingers and finger movement direction in the primary motor cortex. 28th Annual Meeting of the Society for the Neural Control of Movement, Santa Fe (USA).

M Liu, **SA Arbuckle**, L Okorokova, A Herrera, A Kaiser (2017). Does S1 spiking activity encode sensory feedback for goal-directed movements in a grasping task? Advances in Motor Learning & Motor Control (SfN Satellite meeting), Washington D.C. (USA).

SA Arbuckle, J Weiler, EA Kirk, M Saikaley, C Rice, M Schieber, J Diedrichsen, N Ejaz (2017). Extension and flexion representations in M1 spatially cluster around the moving finger. Advances in Motor Learning & Motor Control (SfN Satellite meeting), Washington D.C. (USA).

H Ritz, **SA Arbuckle**, C Wild, I Johnsrude (2015). Enhanced recognition memory for acoustically degraded sentences. 39th MidWinter Meeting of the Association for Research in Otolaryngology, San Diego (USA).

CONFERENCE POSTERS

SA Arbuckle, JA Pruszynski, J Diedrichsen (2020). Integration of tactile information from multiple fingers in human primary sensory cortex measured using high-resolution fMRI. Annual Neuroscience Research Day, London (Canada). **top poster award*

SA Arbuckle, JA Pruszynski, J Diedrichsen (2019). Integration of tactile information from multiple fingers in human primary sensory cortex measured using high-resolution fMRI. 49th Annual Meeting of the Society for Neuroscience, Chicago (USA).

SA Arbuckle, Weiler J, Kirk EA, Saikaley M., Rice C, Schieber M, Diedrichsen J, Ejaz N. (2018) Representation of fingers and finger movement direction in the primary motor cortex. 31st Annual Meeting of the Canadian Student Health Research Forum, Winnipeg (Canada). **by invitation*

SA Arbuckle, J Weiler, EA Kirk, M Saikaley, C Rice, M Schieber, J Diedrichsen, N Ejaz (2018). Representation of fingers and finger movement direction in the primary motor cortex. Mechanisms of Dexterous Behaviour Conference, HHMI Janelia (USA).

SA Arbuckle, A Yokoi, J Diedrichsen (2017). Is representational similarity analysis stable across a broad range of overall fMRI activity levels? 23rd Annual Meeting of the Organization for Human Brain Mapping, Vancouver (Canada). **travel grant award*

SA Arbuckle, A Yokoi, J Diedrichsen (2016). Stability of representational similarity analysis across a large range of overall activation levels. 46th Annual Meeting of the Society for Neuroscience, San Diego (USA).

J Diedrichsen, **SA Arbuckle**, A Yokoi (2016). Studying the representational structure of simple and complex hand movements in the human motor cortex. 26th Annual Meeting of the Neural Control of Movement, Montego Bay (Jamaica).