Spencer Arbuckle

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Education

2016–21	Ph.D. Neuroscience	Western University	advisors: Jörn Diedrichsen, Andrew Pruszynski
2010–14	B.Sc. Hon. Psychology	Queen's University	advisor: Ingrid Johnsrude

Publications [google scholar profile]

[8] **Arbuckle SA**. (2021) Brain representations of dexterous hand control: Investigating the functional organization of individuated finger movements and somatosensory integration. Western University (*PhD thesis)*

[7] **Arbuckle SA**, Pruszynski JA, Diedrichsen J. (2021) Mapping the integration of sensory information across fingers in human sensorimotor cortex. bioXriv *(preprint; in revision at Journal of Neuroscience)*

[6] Fox AS, Holley D, Klink PC, **Arbuckle SA**, Barnes CA, Diedrichsen J, Kwok SC, Kyle C, Pruszynski JA, Seidlitz J, Zhou X, Poldrack RA, Gorgolewski KJ. (2021) Sharing voxelwise neuroimaging results from rhesus monkeys and other species with Neurovault. NeuroImage 225: 117518.

[5] **Arbuckle SA**, 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: 9210-9223.

[4] **Arbuckle SA**, Yokoi A, Pruszynski JA, Diedrichsen J. (2019) Stability of representational geometry across a wide range of fMRI activity levels. NeuroImage 186: 155-163.

[3] Yokoi A, **Arbuckle SA**, Diedrichsen J. (2018) The role of human primary motor cortex in the production of skilled finger sequences. Journal of Neuroscience 38: 1430-1442.

[2] Diedrichsen J, Yokoi A, **Arbuckle SA**. (2018) Pattern Component Modeling: A flexible approach for understanding the representational structure of brain activity patterns. NeuroImage 180: 119-133.

[1] Lambert C, **Arbuckle SA**, Holden R. (2016) The Marlow-Crowne Social Desirability Scale outperforms the BIDR Impression Management Scale for identifying fakers. Journal of Research in Personality 61: 80-86.

Awards & Scholarships

2020	Western University Neuroscience Research Day top poster award ($100)
2019	DPZ Primate Systems Neuroscience Summer School Travel Award (€500)
2018	NSERC PGS-D Postgraduate Scholarship ($63,000)
2018	Ontario Graduate Scholarship ($15,000) – *declined*
2017	Western University Neuroscience Conference Travel Award ($500)
2017	Computational Sensorimotor Neuroscience (*CoSMo*) Summer School – Best project
2017	Brain Canada Travel Scholarship to attend *CoSMo* Summer School ($1,500)
2017	BMI Collaborative Research Grant: Ejaz, Weiler, & Arbuckle ($2,296)
2013,14	Queen's University Dean's Honour List
2010	Queen's University Academic Excellence Entrance Scholarship ($1500)
2010	University of Winnipeg Special Entrance Scholarship ($1750) – *declined*

Invited Talks

11/2020	Cortical contributions to human hand control. Be.Neuro Lab, Dept. of Bioengineering, Imperial College London, London, UK.
03/2018	Can fMRI be used to make inferences on neural representations? Dept. of Cognitive, Linguistic, & Psychological Sciences, Brown University, Providence, USA.

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

Conference Talks

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

[4] **Arbuckle SA**, 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. Society for the Neural Control of Movement, Santa Fe, USA.

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

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

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

**indicates primary speaker*

Conference Posters

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

[6] **Arbuckle SA***, Pruszynski JA, Diedrichsen J. (2019) Integration of tactile information from multiple fingers in human primary sensory cortex measured using high-resolution fMRI. Society for Neuroscience, Chicago, USA.

[5] **Arbuckle SA***, 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. Canadian Student Health Research Forum, Winnipeg, Canada. *nominated to attend by the Western Neuroscience graduate program*

[4] **Arbuckle SA***, 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. Mechanisms of Dexterous Behaviour, HHMI Janelia, USA.

[3] **Arbuckle SA***, Yokoi A, Diedrichsen J. (2017) Is representational similarity analysis stable across a broad range of overall fMRI activity levels? Organization for Human Brain Mapping, Vancouver, Canada. *travel grant awarded*

[2] **Arbuckle SA***, Yokoi A, Diedrichsen J. (2016) Stability of representational similarity analysis across a large range of overall activation levels. Society for Neuroscience, San Diego, USA.

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

Workshop Participation

2019 Representational Similarity Analysis 3.0 Workshop. Collingwood, Canada.
2019 DPZ Primate Systems Neuroscience Summer School. Bad Bevensen, Germany. *travel award*
2017 Computational Sensorimotor Neuroscience (*CoSMo*). University of Minnesota, USA. *travel award*

Media & Outreach

2022–present	Volunteer with the Canadian Science Policy Centre (Evaluation & Reports Committee)
03/2022	Neuroadvocate for the Canadian Neuroscience Association (CAN) Parliament Hill Week
03/2021	Served as an internal reviewer for a Western University Graduate Program Review
10/2021	Invited by UWO graduate student society to give an instructional lecture ("Advice for 10-minute science presentations") for neuroscience graduate students [link | youtube]
12/2019	Research featured in The Dorsal Column (London, ON-based science publication) [link]
07/2019	Co-organized and lead a two-day workshop with Dr. Marieke Mur ("Analysis of Neural Population Dynamics") for the BMI Computational Core Methods Lunches at UWO (50+ attendees) [link]
08/2018	Interviewed about my research for CHRW 94.9FM Gradcast radio show [link]
2017,18, 20	Volunteer judge for the Thames Valley Science & Engineering Fair

Research Experience

01/2016 – 10/2021	Graduate Student, Systems Neuroscience labs of Jörn Diedrichsen & Andrew Pruszynski, Western University, London, Ontario, Canada
05/2014 – 08/2015	Research Assistant, Cognitive Neuroscience labs of Ingrid Johnsrude & Stefan Köhler, Western University, London, Ontario, Canada
09/2013 – 04/2014	Bachelor Student, Cognitive Neuroscience lab of Ingrid Johnsrude, Queen's University, Kingston, Ontario, Canada
05/2013 – 08/2013	Undergraduate Educational Researcher for Ingrid Johnsrude & Jill Atkinson, Queen's University, Kingston, Ontario, Canada
01/2012 – 04/2013	Research Assistant, Personality Assessment lab of Ronald Holden, Queen's University, Kingston, Ontario, Canada

Teaching & Mentorship

Ten years of teaching-related experience. Listed below is a curated selection:

2022–present	Neurotechnology micro-credentials- course development lead	Queen's University
2020	Intro to Data Science I (compsci 4414)- TA	Western University
2020–22	Intro to Neural Networks (applied math 9624B)- lectures	Western University
2018–21	Regular presenter at the Computational Core Methods Lunches	Western University
2017	Information Systems (compsci 1032)- TA	Western University
2016	Statistics for Science (stats 2244)- TA	Western University
2016	Intro to Statistics (stats 1024)- TA	Western University
2012–14	Principles of Psychology (psyc 100)- TA	Queen's University

Mentorship:

- Master's Thesis of Deepanshu Wadhwa, Title: A generative-discriminative approach to human brain mapping (2019–2021). Western University, London, Ontario, Canada
- Master's Thesis of Megha Verma, Title: Evaluating anesthetic protocols for non-human primate functional neuroimaging (2018–2020). Western University, London, Ontario, Canada

Professional contributions

Membership: Society for Neuroscience
Invited Reviewer: Journal of Neurophysiology, NeuroImage
Grant Review: Swiss National Science Foundation (SNSF)