

Education

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

Awards & Scholarships

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| 2020 | Western University Neuroscience Research Day top poster award (\$100 CAD) |
| 2019 | DPZ Primate Systems Neuroscience Summer School Travel Award (€500) |
| 2018–21 | NSERC Postgraduate Scholarship – Doctoral award (\$63,000 CAD) |
| 2018–19 | Ontario Graduate Scholarship (\$15,000 CAD) – <i>declined</i> |
| 2017 | Western University Neuroscience Conference Travel Award (\$500 CAD) |
| 2017 | Computational Sensorimotor Neuroscience (<i>CoSMo</i>) Summer School – Best project |
| 2017 | Brain Canada Travel Scholarship to attend <i>CoSMo</i> Summer School (\$1,500 CAD) |
| 2013–14 | Queen's University Dean's Honour List |
| 2010 | Queen's University Academic Excellence Entrance Scholarship (\$1500 CAD) |
| 2010 | University of Winnipeg Special Entrance Scholarship (\$1750 CAD) – <i>declined</i> |

Grants & Funding

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| 2022–23 | Ontario Micro-credentials Challenge Fund, Community Impact Award. Role: collaborator. <i>Neurotechnology Micro-credential Program</i> . (\$973,563 CAD) |
| 2017–18 | Brain & Mind Institute, Collaborative Research Grant. Role: co-applicant. <i>Cortical representations of finger flexion & extension movements</i> . (\$2,296 CAD) |

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. *bioRxiv (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.

Invited Talks

- 10/2021 How to give short and effective science talks. Society for Neuroscience Graduate Students, Western University, Canada.
- 11/2020 Cortical contributions in human hand control. Be.Neuro Lab, Dept. of Bioengineering, Imperial College London, UK.
- 03/2018 Can fMRI be used to make inferences on neural representations? Dept. of Cognitive, Linguistic, & Psychological Sciences, Brown University, USA.
- 04/2017 An introduction to pattern component modeling. BLAM Lab, Dept. of Neurology, Johns Hopkins University School of Medicine, 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, San Diego, 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.

Competitive Research Courses & Workshops

- 2022 Business & Consulting Seminar Series, Western GMCA, Canada.
- 2019 Representational Similarity Analysis 3.0 Workshop, Canada.
- 2019 Primate Cognitive Neuroscience Summer School, DPZ, Germany. [\[link\]](#)
- 2017 Computational Sensorimotor Neuroscience Summer School, University of Minnesota, USA. [\[link\]](#)

Teaching

Ten years of teaching-related experience. A curated selection is listed below:

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|----------|---|--------------------|
| 2022–now | Course development lead for Neurotechnology micro-credentials | Queen's University |
| 2020–22 | Intro to Neural Networks (undergrad & graduate)- lectures | Western University |
| 2020–21 | Intro to Data Science I (undergrad & graduate)- TA | Western University |
| 2019 | Analysis of Neural Population Dynamics workshop- co-lead | Western University |
| 2018–21 | Regular presenter at the Computational Core Methods Lunches | Western University |
| 2017 | Information Systems (undergrad computer science)- TA | Western University |
| 2016 | Statistics for Science (undergrad biology)- TA | Western University |
| 2016 | Intro to Statistics (undergrad stats)- TA | Western University |
| 2012–14 | Principles of Psychology (undergrad psychology)- TA | Queen's University |

Mentorship

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

Relevant Professional & Research Experience

- 2022–now **Course Development Lead** with the Neurotechnology Micro-credential Program at the Centre for Neuroscience Studies, Queen's University (Ontario, Canada)
- 2016–21 **Graduate Student Researcher**, Sensorimotor Systems Neuroscience labs of Dr. Jörn Diedrichsen & Dr. Andrew Pruszyński, Western University (Ontario, Canada)
- 2014–15 **Research Assistant**, Cognitive Neuroscience labs of Ingrid Johnsrude & Stefan Köhler, Western University (Ontario, Canada)
- 2013–14 **Undergraduate Thesis Student**, Cognitive Neuroscience lab of Dr. Ingrid Johnsrude, Queen's University (Ontario, Canada)
- 2013 **Undergraduate Educational Researcher** for Dr. Ingrid Johnsrude & Dr. Jill Atkinson, Queen's University (Ontario, Canada)
- 2012–13 **Undergraduate Research Assistant**, Personality Assessment lab of Dr. Ronald Holden, Queen's University (Ontario, Canada)

Professional Contributions

Invited Reviewer: Journal of Neurophysiology, NeuroImage

Grant Reviewer: Swiss National Science Foundation (SNSF)

Society Membership: Society for Neuroscience

Service Roles

- 03/2021 Internal Reviewer for a Graduate Program Review, Western University. [[link](#)]
- 07/2019 Co-organized & lead a 2-day workshop with Dr. Marieke Mur at Western University. [[link](#)]
- 2011–14 Chair of the Psychology Undergraduate Student Council, Queen’s University.

Outreach & Volunteering

- 2022–*now* Volunteer with the Canadian Science Policy Centre. [[link](#)]
- 2022 Contributor to the Canadian Neuroscience Association’s Science Funding page. [[link](#)]
- 03/2022 Science Advocate for Canadian Neuroscience Association’s Parliament Hill Week. [[link](#)]
- 2019–2021 Volunteer Reviewer with the Presentation Skills Workshop, Western University.
- 2017,18,20 Volunteer Judge for the Thames Valley Science & Engineering Fair.

Media Coverage

- 2022 Contributor to the Canadian Neuroscience Association’s Science Funding page. [[link](#)]
- 12/2019 Research featured in The Dorsal Column (an Ontario-based science publication). [[link](#)]
- 08/2018 Interviewed about my research for CHRW 94.9FM Gradcast radio show. [[link](#)]