Mehrdad Kashefi

Contact Info

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Professional Experience

Western University, London, ON, Canada — 2026 - now
Postdoctoral Research Fellow
Advisors: Dr. Andrew Pruszynski, Dr. Jörn Diedrichsen

Education

Western University, London, ON, Canada — 2020 - 2025
Ph.D. Neuroscience
Thesis Title: "Neural Basis of Sequential Actions"
Advisors: Dr. Andrew Pruszynski, Dr. Jörn Diedrichsen
Defense date: November 7th, 2025

Iran University of Science and Technology (IUST), Tehran, Iran — 2017 - 2020
M.S. Electrical Engineering - Bioengineering

Lorestan University, Lorestan, Iran — 2013 - 2017
B.S. Electrical Engineering - Electronics

Awards

COSYNE Presenters Travel Grant–USD $500	2025
Neural Control of Movement (NCM) Travel Award	2024
International Ontario Graduate Scholarship–CAD $15,000	2023
Best Oral Presentation at Neuroscience Research Day, Western University	2023
Neuroscience Program Travel Award, Western University–CAD $500	2022

Publications

Preprints

[3] Neupane S., **Kashefi M.**, Kersten R., Pruszynski J.A., Grahn J., Michaels J. "Reward-driven emergence of auditory pattern encoding in the primate motor system", bioRxiv 10.64898/2026.01.29.702435

[2] Panjehpour A., **Kashefi M.**, Diedrichsen J., Pruszynski J.A. "Sequence preparation is not always associated with a reaction time cost", bioRxiv 10.1101/2025.11.11.687917

[1] **Kashefi M.**, Michaels J., Kersten R., Lau J., Diedrichsen J., Pruszynski J.A. "Compositional neural dynamics during reaching", bioRxiv 10.1101/2025.09.04.674069

Published

[9] Michaels J., **Kashefi M.**, Zheng J., Codol O., Weiler J., Kersten R., Lau, J., Gribble P., Diedrichsen J., Pruszynski J.A. "Sensory expectations shape neural population dynamics in motor circuits", Nature, 2025

[8] **Kashefi M.**, Diedrichsen J.†, Pruszynski J.A.† "Motor sequence learning involves better prediction of the next action and optimization of movement trajectories", Journal of Neuroscience, 2025 († := Co-senior authors)

[7] Shahbazi M., Ariani G., **Kashefi M.**, Pruszynski J.A., Diedrichsen J., "Neural correlates of online action preparation", Journal of Neuroscience, 2024

[6] **Kashefi M.**, Reschechtko S., Ariani G., Shahbazi M., Alice Tan, Diedrichsen J., Pruszynski J.A. "Future movement plans interact in sequential arm movements", eLife.94485.1,2024

[5] Chung B., Zia M., Thomas K., Michaels J., Jacob A., Pack A., Williams M., Nagapudi K., Teng L., Arrambide E., Ouellette L., Oey N., Gibbs R., Anschutz P., Lu J.,

Wu Y., **Kashefi M.**, Oya T, Kersten R, Mosberger A., O'Connell S, Wang R., Marques H, Rita P. Mendes A., Lenschow C., Kondakath G., Kim J., Olson W.,Quinn K., Perkins P., Gatto G., Thanawalla A., Coltman S., Kim T., Smith T., Binder-Markey B., Zaback M., Thompson C., Giszter S., Person A., Goulding M., Azim E., Thakor N., O'Connor D., Trimmer B., Lima S., Carey M., Pandarinath C., Costa R., Pruszynski A., Bakir M., Sober S. "Myomatrix arrays for high-definition muscle recording", eLife.88551.1, 2023

[4] Codol O., Michaels J. A, **Kashefi M.**, Pruszynski J.A., Gribble P. "MotorNet: a Python toolbox for controlling differentiable biomechanical effectors with artificial neural networks", eLife.88591.1, 2023

[3] Codol O., **Kashefi M.**, Forgaard C.J., Galea J.M., Pruszynski J.A., Gribble P. "Sensorimotor feedback loops are selectively sensitive to reward", eLife 12:e81325, 2023

[2] Ahmadi A.*, **Kashefi M.***, Shahrokhi H, Nazari M.A., "Computer aided diagnosis system using deep convolutional neural networks for ADHD subtypes", Biomedical Signal Processing and Control, 2021 (* := equal contribution)

[1] **Kashefi M.**, Daliri M.R., "A stack LSTM structure for decoding continuous force from local field potential signal of primary motor cortex (M1)", BMC bioinformatics, 2021

Conference

Talks

Kashefi M., Michaels J. A, Diedrichsen J., Pruszynski J.A., "Motor cortical dynamics during reaching connect posture-specific attractors", Neural Control of Movement (NCM), Panama City, Panama, 2025

Kashefi M., Diedrichsen J., Pruszynski J.A., "A compositional solution for sequence learning", Neural Control of Movement (NCM), Dubrovnik, Croatia, 2024 (Online)

Kashefi M., Diedrichsen J., Pruszynski J.A., "Is motor learning merely anticipation?", Neuroscience Research Day (NRD), London, Canada, 2023

Posters

Kashefi M., Michaels J. A, Diedrichsen J., Pruszynski J.A., "Motor cortical dynamics during reaching connect posture-specific attractors", Cosyne, Montreal, Canada, 2025

Kashefi M., Diedrichsen J., Pruszynski J.A., "Is there more to sequence learning than better anticipation?", Neural Control of Movement (NCM), Victoria, Canada, 2023

Kashefi M., Ariani G., Diedrichsen J., Pruszynski J.A., "Planning multiple future actions in sequential reaching", Neural Control of Movement (NCM), Dublin, Ireland, 2022

Invited talks

Kashefi M., "Compositional neural dynamics during reaching", Shine Lab, University of Sydney, October 2025 (Online)

Kashefi M., "Motor cortical dynamics during reaching connect posture-specific attractors", Chinese institute for brain research, July 2025 (Online)

Kashefi M., "Future movement plans interact in sequential arm movements", Motor control Group, West Virginia University, December 2024 (Online)

Teaching

Mentorship

Armin Panjehpour (PhD, Western University, 2023-)

Alice Tan (BSc, Western University, 2022-2023)

Workshop

Introduction to Machine Learning, Brainhack Western 2021

TA	Physiology and Pharmacology Laboratory, Western University	2021
	Computational Neuroscience, IUST	2019-2020
	Electronic Circuits, IUST	2018

Professional Service

Peer review — Nature Human Behaviour (#1) — Current Biology (#1) — JNeuroscience (#1) — eLife (#2)

Outreach

Mentorship Committee, Society of Neuroscience Graduate Students, Western — 2022
Mentoring first-year graduate students in the neuroscience program.

Thames Valley Science and Engineering Fair, London, ON, CA — 2021-2026
Judge for Grade 4-12 Science Engineering Fair

Python Camp, IUST — 2019
Introductory python course for middle school students

Executive Committee Member, ICBME , IUST — 2019
26th International Iranian Conference on Biomedical Engineering (ICBME)

Referees

Dr. Andrew Pruszynski
Associate Professor, Canada Research Chair in Sensorimotor Neuroscience
Western University
Email: andrew.pruszynski@uwo.ca

Dr. Jörn Diedrichsen
Professor, Western Research Chair for Motor Control and Computational Neuroscience
Western University
Email: jdiedric@uwo.ca

Dr. Jonathan Michaels
Assistant Professor
York University
Email: jmichae@yorku.ca