# Alireza Aminian

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## Education

**Polytechnique Montréal**, Montréal, QC, Canada — 2023 - now
*Ph.D. Candidate, Biomedical Engineering*
Thesis: "Assessment of Ipsilateral Cortical Control of Arm Movements"
Supervisor: Dr. Marco Bonizzato

**Iran University of Science and Technology**, Tehran, Iran — 2019 - 2022
*M.Sc., Biomedical Engineering – Bioelectric*
Thesis: "Closed-loop bladder neuroprosthesis in spinal cord injured cats"
Supervisor: Dr. Abbas Erfanian

**Islamic Azad University - South Tehran Branch**, Tehran, Iran — 2014-2018
*B.Sc., Biomedical Engineering – Bioelectric*
Project: "Analysis of Fluoroquinolones effects on ECG QTc Intervals"

## Publications

Published

[2] Qasemi A., **Aminian A.**, Erfanian A., "The inhibitory effect of intraspinal microstimulation of the sacral spinal cord on nonlinear bladder reflex dynamics in cats", *Frontiers in Neuroscience*, 19, 1519377. https://doi.org/10.3389/fnins.2025.1519377.

[1] Qasemi A., **Aminian A.**, Erfanian A., "Real-time prediction of bladder urine leakage using fuzzy inference system and dual Kalman filtering in cats", *Scientific Reports*, 14(1), 3879. https://doi.org/10.1038/s41598-024-53629-5.

Under Review

[1] **Aminian A.**, Qasemi A., Erfanian A., "Closed-loop control of bladder voiding through selective stimulation of the Pudendal nerve without direct access to the afferent nerve fascicle in cats", *Submitted to eLife – preprinted in bioRxiv*, ...

## Conferences

Talks

**Aminian A.,** Bonizzato M., "Neuroprosthetics to restore hand function after spinal cord injury", *Neuroprosthetics Conference,* Montréal, Canada, 2025.

**Aminian A.,** Bonizzato M., "Ipsilateral Cortical Control of Arm Movements Assessed via an Intracortical Interface", *Neurodiscussions - Groupe de recherche sur la signalisation neurale et la circuiterie,* Montréal, Canada, 2025.

**Aminian A.**, "Vagus nerve stimulation and its current clinical usages", *The Third Online Seminar of Iran's Brain Mapping Student Branch,* Tehran, Iran, 2022.

Poster

**Aminian A.,** Bonizzato M., "Investigating ipsilateral hand control using neuromodulation and neural activity in the forelimb motor cortex in rats", Combined Annual Meeting of the Canadian Neuromodulation Society and the German Neuromodulation Society, Québec City, Canada, 2025.

**Aminian A.,** Bonizzato M., "Contribution of the forelimb motor cortex to ipsilateral and contralateral forelimb control during standing and sitting single-pellet reaching in rats", 3rd Symposium of the Centre for Innovative Biomedicine, Montréal, 2025.

**Aminian A.,** Benavente A., Bonizzato M., "Exploring the neural control of the ipsilateral hand using intracortical stimulation of the motor cortex", *RéseauLAB,* Granby, Canada, 2025.

**Aminian A.**, Sayar M., Bonizzato M., Martinez M., "Selectivity of motor cortex neuromodulation strategies in rats: a comparison of epidural and intracortical stimulation for alleviating walking deficits", Society for Neuroscience Meeting, Chicago, USA, 2024.

**Aminian A.**, Sayar M., Bonizzato M., Martinez M., "Selectivity assessment of intracortical and epidural stimulation of motor cortex for alleviating walking Deficits in spinal cord injured rats", Neuroprosthetics Symposium, Montréal, Canada, 2024.

## Awards

Best trainee talk, 1st place, at Neuroprosthetics Conference, Montréal — 2025

Excellence List, Institute of Biomedical Engineering, Polytechnique Montréal — 2025

Awarded top student of the year based on the cumulative GPA, Gifted and Talented Office at Iran University of Science and Technology — 2020

Full tuition fee waiver for Master's, Iran Ministry of Science, Research and Technology — 2019

**Work Experience**

*Research Scientist*, Iran University of Science and Technology, Tehran, Iran. 2022-2023
Project: "Working on the closed-loop selective stimulation of the Pudendal nerve trunk to improve bladder voiding in cats"

**Teaching**

Statistical Pattern Recognition, TA, Iran University of Science and Technology 2022
Electric Circuits II, TA, Iran University of Science and Technology 2019-2021

**Mentorship**

Ana Benavente (B.Sc., Tecnológico de Monterrey, 2025)
Cristina Nicoletti (M.Sc., Università degli Studi di Genova, 2025)
Aymene Bensetiti (B.Sc., Polytechnique Montréal, 2025)
Matthieu Sayar (M.Sc., EPFL, 2024)

**Certificates**

IOP Trusted Reviewer status, IOP Publishing. (Certificate) 2025
Quebec Scientific Entrepreneurship Program, V1 Studio. (Certificate) 2025
Professional Skills Development and Training, Mitacs. (Certificate) 2025
5-Day Gen AI Intensive Course, Kaggle. (Certificate) 2025
NASA Open Science, NASA. (Certificate) 2025
Peer Review Excellence online training graduate, IOP Publishing. (Certificate) 2024
Computational Neuroscience Course, Neuromatch Academy. (Certificate) 2023
Mathematics for ML Specialization, Imperial College London. (Certificate) 2020

**Skills**

Laboratory
Conducting in-vivo electrophysiological experiments in laboratory rats and cats
Performing surgeries on laboratory rats and cats
Training laboratory rats on behavioral tasks
Histology and staining

Programming
Python, MATLAB, Java, C, and LabVIEW

Software
Inkscape, Gimp, Adobe illustrator and Photoshop, Microsoft Office, Blender.

**Volunteering**

Mathematics instructor and curriculum coordinator 2020-2023
Summer program for children from low-income families
Alai's Technical and Vocational Training Private School, Tehran, Iran.

**Languages**

English – Full professional proficiency
French – Limited working proficiency
Persian – Native

**References**

Dr. Marco Bonizzato
Associate Professor, Department of Electrical Engineering
Polytechnique Montréal
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Dr. Abbas Erfanian
Professor, Chair of Iran Neural Technology Center, Department of Biomedical Engineering
Iran University of Science and Technology
Email: Erfanian@iust.ac.ir

Dr. Mohammad Reza Daliri
Professor, Department of Biomedical Engineering
Iran University of Science and Technology
Email: daliri@iust.ac.ir