Pedram Parnianpour

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Education

2018-2024: PhD in Neuroscience, University of Alberta, Edmonton, AB, Canada (GPA 4/4)
2014-2017: MSc in Biomedical Engineering, Amirkabir University of Technology, Tehran, Iran
2010-2014: BSc in Electrical Engineering, Tafresh University, Tafresh, Iran

Employment and professional affiliations

July 2024-now: Postdoctoral Research Fellow, Djavad Mowafaghian Centre for Brain Health, University of British Columbia, Vancouver, BC, Canada
Sept 2018-June 2024: Graduate Research Assistant Fellow, Neuroscience and Mental Health Institute, University of Alberta, Edmonton, AB, Canada
Jan 2021-Apr 2024: Graduate Teaching Assistant, Engineering Student Success Centre, Faculty of Engineering, University of Alberta, Edmonton, AB, Canada
Sept 2014-Feb 2017: Graduate Research Assistant Fellow, Department of Biomedical Engineering, Amirkabir University of Technology, Tehran, Iran

Podium presentations

1. 13th Annual Meeting of the Neuroimaging Society in ALS, Montreal, December 2024
2. 34th International Symposium on ALS/MND, Basel, Switzerland, December 2023
3. 25th Annual Neuroscience Research Day, University of Alberta, March 2024
4. 24th Annual Neuroscience Research Day, University of Alberta, March 2023
5. ALS Canada Research Forum Meeting-Bonus Session, Online, June 2021
6. Alberta Imaging Symposium (AIS), University of Calgary, May 2019

Poster presentations

1. ALS Canada Research Forum Meeting (2023), **Parnianpour, P.**, Benatar, M., Briemberg, H., et al. “Mismatch between clinical trial-based classification of ALS stage and the burden of cerebral pathology”.
2. 27th annual meeting of the Organization for Human Brain Mapping (2021), **Parnianpour, P.**, Ta, D., Ishaque, A. H., et al. “Texture analysis reveals cerebral degeneration in Amyotrophic Lateral Sclerosis: a multicenter study”.

3. ALS Canada Research Forum Meeting (2021), **Parnianpour, P.**, Ta, D., Ishaque, A. H., et al. "Texture analysis reveals cerebral degeneration in Amyotrophic Lateral Sclerosis: a multicenter study".
4. 25th annual meeting of the Organization for Human Brain Mapping (OHBM 2019), **Parnianpour, P.**, Kalra, S., "Altered functional connectivity of sensorimotor and cerebellar networks in ALS: a multi-center study".
5. ALS Canada Research Forum Meeting (2019), **Parnianpour, P.**, Benatar, M., Briemberg, H., et al. "Increased default-mode network functional connectivity in ALS: a resting-state fMRI study".
6. Alberta Imaging Symposium (AIS 2019), **Parnianpour, P.**, Kalra, S., "Increased default-mode network functional connectivity in ALS: a resting-state fMRI study".
7. 7th International Conference on Cognitive Science (ICCS 2017), **Parnianpour, P.** and Towhidkhah, F., "Altered resting-state functional connectivity in adult ADHD".
8. 7th International Conference on Cognitive Science (ICCS 2017), **Parnianpour, P.** and Towhidkhah, F., "Abnormal functional connectivity map between anterior cingulate cortex and rest of the brain in adult ADHD".

Teaching

1. Spring 2025: Course instructor, ENSC 475/875 (Biomedical Instrumentation), School of Engineering Science, Simon Fraser University, Burnaby, BC, Canada
2. 2021-2024: TA, Math 102 (Applied linear algebra), Engineering Student Success Centre, Faculty of Engineering, University of Alberta, Edmonton, AB, Canada
3. 2022-2023: TA, Physics 130 (Wave motion, optics, and sound), Engineering Student Success Centre, Faculty of Engineering, University of Alberta, Edmonton, AB, Canada
4. 2015-2017: Lab instructor, Logic Circuits Laboratory: Basic circuits and FPGA programming, Department of Biomedical Engineering, Amirkabir University of Technology, Tehran, Iran
5. 2016-2017: Lab instructor, Linear Control Systems Laboratory, Department of Biomedical Engineering, Amirkabir University of Technology, Tehran, Iran
6. 2016: Lab instructor, Microprocessor Laboratory: ARM microprocessors, Department of Biomedical Engineering, Amirkabir University of Technology, Tehran, Iran
7. 2016: TA, Pattern recognition and machine learning, Department of Biomedical Engineering, Amirkabir University of Technology, Tehran, Iran
8. 2016: TA, Biological systems modeling, Department of Biomedical Engineering, Amirkabir University of Technology, Tehran, Iran
9. 2014: TA, Linear Control Systems, Department of Electrical Engineering, Tafresh University, Tafresh, Iran

Supervision

1. 2023: BSc student Socrates Temraz, summer project "Evaluation of cerebral degeneration in ALS using texture analysis of T2-weighted MRI scans"

2. 2022: BSc student Adam Elamy, summer project "Resting-state functional connectivity of the basal ganglia in patients with ALS"
3. 2021: Neurology resident, Ekhlas Assaedi, course project "Quantifying Cerebral Degeneration in Amyotrophic Lateral Sclerosis Using Texture Analysis of Multimodal MRI"
4. 2020: BSc student Andrew Wu, Final project "Mapping cerebral degeneration in ALS with FLAIR MRI texture: a longitudinal, multicenter study"

Publications

1. Parnianpour, P., Steinbach, R., Grosskreutz, J., Kalra, S., "T1-weighted MRI Texture Analyses in ALS Patients Stratified by the D50 Progression Model". *Brain Commun* (2024). https://doi.org/10.1093/braincomms/fcae389
2. Parnianpour, P., Benatar, M., Briemberg. H., et al. Mismatch between clinically-defined classification of ALS stage and the burden of cerebral pathology, *J Neurol* (2024). https://doi.org/10.1007/s00415-024-12190-x (In collaboration with Biogen Inc.)
3. Kuan, LH., Parnianpour, P., Kushol, R. *et al*. Accurate personalized survival prediction for amyotrophic lateral sclerosis patients. *Sci Rep* 13, 20713 (2023). https://doi.org/10.1038/s41598-023-47935-7
4. Kushol, R., Parnianpour, P., Wilman, A.H. *et al*. Effects of MRI scanner manufacturers in classification tasks with deep learning models. *Sci Rep* 13, 16791 (2023). https://doi.org/10.1038/s41598-023-43715-5
5. Assaedi, E., Parnianpour, P., Wu, A., et al. Quantifying Cerebral Degeneration in Amyotrophic Lateral Sclerosis Using Texture Analysis of Multimodal MRI, *Neurology* (2020). https://doi.org/10.1212/WNL.94.15_supplement.4560
6. Moattari, M., Parnianpour, P., and Moradi, M. H. Independent component analysis approach using higher orders of non-Gaussianity (*2017). Iranian Conference on Electrical Engineering (ICEE)*, Tehran, pp. 49-54, https://doi.org/10.1109/IranianCEE.2017.7985098

Manuscripts under revision/submission/preparation

1. Parnianpour, P. and Pioro, E. P. "Application of deep learning in MRI studies of ALS: A systematic review". Status: Under submission
2. Parnianpour, P., Benatar, M., Briemberg. H., et al. "Progressive and short-interval changes observed in the corticospinal tract and corpus callosum of ALS patients: A texture analysis study". Status: Submitted
3. Dey, A., Baumeister, T. R., ..., Parnianpour, P., et al. "Disease stratification in ALS: a comparison of ML-based clustering of cerebral functional connectivity with contemporary clinical criteria". Status: Under submission
4. Parnianpour, P., Benatar, M., Briemberg. H., et al. "Radiological Subtypes of ALS with Distinct Cerebral Pathological Patterns: A Multicenter Multimodal Study". Status: Submitted

5. Harrison, M., Liu, G., Parnianpour, P., et al. "Individual Level Biomarker of Amyotrophic Lateral Sclerosis Mediated Corticospinal Tract Degeneration Utilizing Z-Score Mapping". Status: Under preparation, expected submission: June 2025

Awards and scholarships

2024: ALS Canada Travel Award
2023: Academic Travel Grant, Graduate Student Association, University of Alberta
2018: Doctoral Recruitment Scholarship, Faculty of Graduate Studies and Research, University of Alberta
2014: Full Scholarship for Tuition, Faculty of Graduate Studies and Research, Amirkabir University of Technology
2010: Full Scholarship for Tuition, Tafresh University

Skills

Signal and image processing
Bio Instruments
Machine learning and computer vision
Deep learning and transfer learning
Programming (Python, MATLAB, and Linux)
Python packages (PyTorch, Keras, Tensorflow)
Advanced statistics and mathematical modelling
Connectivity and graph theory
Notable software: SPSS, SPM, FSL, CONN, ITK-SNAP, MRIcroGL, MRIcron, ImageJ

Services

President of the University of British Columbia Postdoctoral Association (2025-2026)
Reviewer in *Neuroimage: Clinical*, *Neuroradiology*, and *Brain Research Bulletin* (since 2024)
Interviewer for undergraduate MD program at the UBC Faculty of Medicine (2025)