

Shyamal Dharia

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EDUCATION

University of Winnipeg

Masters in Applied Computer Science

Winnipeg, Canada

2022 – 2024

- GPA: 4.4/4.5—Graduated with Highest Distinction

Gujarat Technological University

Bachelor of Engineering in Electronics & Communication

Surat, India

2017 – 2021

- GPA: 7.9/10

PUBLICATIONS

Journal Publications:

1. **S. Y. Dharia**; Q. Liu; S. D. Smith; C. E. Valderrama
A Novel Approach for the Early Identification of Genetic Risk Factors for Alzheimer's Disease Using EEG and Psychometric Data
IEEE Journal of Biomedical and Health Informatics (JBHI), 2025
<https://doi.org/10.1109/JBHI.2025.3639217>
2. **S. Y. Dharia**; C. E. Valderrama; Q. Liu; B. K. Fredborg; A. S. Desroches; S. D. Smith
Fractal Dimension of Resting-State EEG as a Biomarker for Autonomous Sensory Meridian Response (ASMR)
IEEE Journal of Biomedical and Health Informatics (JBHI), 2025
<https://doi.org/10.1109/JBHI.2025.3612301>
3. **S. Y. Dharia**; Q. Liu; S. D. Smith; C. E. Valderrama
Dual-Transformer Cross-Attention Framework for Alzheimer's Disease Detection via dPTE-Guided EEG Channel Selection and Multi-Modal Integration
Biomedical Signal Processing and Control, 2025
<https://doi.org/10.1016/j.bspc.2025.108390>
4. M. Niaki; **S. Y. Dharia**; Y. Chen; C. E. Valderrama
Bipartite Graph Adversarial Network for Subject-Independent Emotion Recognition
IEEE Journal of Biomedical and Health Informatics (JBHI), 2025
<https://doi.org/10.1109/JBHI.2025.3570187>

Conference Publications:

5. M. Hojjati; **S. Y. Dharia**; S. G. Camorlinga; S. D. Smith; A. S. Desroches; B. D. Brenneman
Using Machine Learning to Model EEG-Derived Brain Activity During Emotion Regulation
Proceedings of the 46th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Copenhagen, Denmark, 2024
<https://doi.org/10.1109/EMBC58623.2025.11253722>
6. **S. Y. Dharia**; M. Hojjati; S. Rahman; M. M. T. Nur; C. E. Valderrama
CNN-Based Chagas Disease Detection with 12-lead ECG
Computing in Cardiology Conference (CinC) 2025 — PhysioNet Challenge
[\[Link\]](#)
7. **S. Y. Dharia**; S. G. Camorlinga; C. E. Valderrama; M. Hojjati
Dataset-Independent EEG Channel Selection for Emotion Recognition
Proceedings of the 46th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Orlando, FL, USA, 2024
<https://doi.org/10.1109/EMBC53108.2024.10782444>
8. **S. Y. Dharia**; M. Hojjati; S. G. Camorlinga; S. D. Smith; A. S. Desroches
Leveraging Machine Learning and Threshold-Free Cluster Enhancement to Unravel Perception of Emotion and Implied Movement
IEEE EMBS International Conference on Biomedical and Health Informatics (BHI), Houston, TX, USA, 2024
<https://doi.org/10.1109/BHI62660.2024.10913664>

9. **S. Y. Dharia**; C. E. Valderrama; S. G. Camorlinga
Multimodal Deep Learning Model for Subject-Independent EEG-Based Emotion Recognition
IEEE Canadian Conference on Electrical and Computer Engineering (CCECE), Regina, SK, Canada, 2023
<https://doi.org/10.1109/CCECE58730.2023.10289007>

RESEARCH EXPERIENCE

University of Winnipeg	Winnipeg, Canada
<i>Senior Research Assistant</i>	2025 – Present
<ul style="list-style-type: none">Conduct machine learning and statistical analysis on multimodal neuroimaging data (EEG, fMRI, sMRI) to study biomarkers of Alzheimer's Disease, ASMR, and other neurological conditions.Published two peer-reviewed papers in leading journals/conferences, contributing to the fields of biomedical signal processing and computational neuroscience.	
Misericordia Health Center	Winnipeg, Canada
<i>Mitacs Accelerate Intern</i>	May 2024 – Dec 2024
<ul style="list-style-type: none">Developed an EEG data collection pipeline using PsychoPy with custom experiment integration, enabling two successful EEG-based emotion regulation studies with 60+ participants using wireless OpenBCI devices.Designed and trained machine learning models for emotion recognition and intensity prediction, leading to two conference publications.	

TECHNICAL SKILLS

Programming Languages: Python (PyTorch, scikit-learn, NumPy, pandas) and C++ (CUDA)

Signal Processing & Neuroimaging: MNE-Python, Nilearn, SciPy, fMRIprep

Software & Development: Linux/Windows, Git, Docker, ROS (Robot Operating System)

AWARDS

- 2025 - Graduate Student of Highest Distinction
- 2024 - EMBC NextGen Scholar

LEADERSHIP EXPERIENCE

University of Winnipeg	Winnipeg, Canada
<i>CinC Physionet 2025</i>	2025
<ul style="list-style-type: none">Led a team in the PhysioNet/Computing in Cardiology Challenge on Chagas disease detection from ECG signals with a CNN-based morphological features and lead-wise learning approach.	

TEACHING ASSISTANT & ACADEMIC SERVICES

- Reviewer**—IEEE EMBS International Conference on Biomedical and Health Informatics (BHI 25)
- TA**—GACS-7203 Pattern Recognition (Fall 2024 and 2023—*Dr. Camilo E. Valderrama*)
- TA**—GACS-7206 Advance Machine Learning (Winter 2024—*Dr. Sheela Rammana*)

GRANT WRITING EXPERIENCE

- Mitacs Accelerate (2023)**—Assisted in drafting the initial proposal in collaboration with PIs for successful research-industry grant worth \$60,000.
- NSERC Alliance (2025)**—Contributed to the early-stage drafting of a collaborative grant proposal with research faculty and industry partners worth \$30,000, currently under review.
- UWinnipeg Major Research Grant (2025)**—Assisted in preparing the initial proposal with the PI at the University of Winnipeg to support the direct costs of research (worth \$7,500); currently under review.