Shyamal Dharia

[GitHub] [Google Scholar] [LinkedIn] [Email]

EDUCATION

University of Winnipeg — Winnipeg, Canada
Masters in Applied Computer Science — 2022 – 2024

- *GPA: 4.4/4.5—Graduated with Highest Distinction*

Gujarat Technological University — Surat, India
Bachelor of Engineering in Electronics & Communication — 2017 – 2021

- *GPA: 7.9/10*

PUBLICATIONS

Journal Publications:

1. **S. Y. Dharia**, Q. Liu, S. D. Smith, and 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)*, doi: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),” in *IEEE Journal of Biomedical and Health Informatics*, doi:10.1109/JBHI.2025.3612301.
3. **S. Y. Dharia**, Q. Liu, S. D. Smith, and 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*, doi: 10.1016/j.bspc.2025.108390.
4. M. Niaki, **S. Y. Dharia**, Y. Chen and C. E. Valderrama, "Bipartite Graph Adversarial Network for Subject-Independent Emotion Recognition," in *IEEE Journal of Biomedical and Health Informatics*, doi: 10.1109/JBHI.2025.3570187.

Conference Publications:

1. M. Hojjati, **S. Y. Dharia**, S. G. Camorlinga, S. D. Smith, A. S. Desroches, and B. D. Brenneman, “Using Machine Learning to Model EEG-Derived Brain Activity During Emotion Regulation,” *2024 46th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC),* Copenhagen, Denmark, 2024, doi 10.1109/EMBC58623.2025.11253722
2. **S. Y. Dharia**., M. Hojjati, S. Rahman, M. M. T Nur, and C. E. Valderrama. "CNN-Based Chagas Disease Detection with 12-lead ECG." *(CinC 2025: Physionet Challenge) [Link]*
3. **S. Y. Dharia**, S. G. Camorlinga, C. E. Valderrama and M. Hojjati, "Dataset-Independent EEG Channel Selection for Emotion Recognition," *2024 46th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Orlando, FL, USA, 2024, pp. 1-4, doi: 10.1109/EMBC53108.2024.10782444.
4. **S. Y. Dharia**, M. Hojjati, S. G. Camorlinga, S. D. Smith and A. S. Desroches, "Leveraging Machine Learning and Threshold-Free Cluster Enhancement to Unravel Perception of Emotion and Implied Movement," *2024 IEEE EMBS International Conference on Biomedical and Health Informatics (BHI)*, Houston, TX, USA, 2024, pp. 1-8, doi: 10.1109/BHI62660.2024.10913664.
5. **S. Y. Dharia**, C. E. Valderrama and S. G. Camorlinga, "Multimodal Deep Learning Model for Subject-Independent EEG-based Emotion Recognition," *2023 IEEE Canadian Conference on Electrical and Computer Engineering (CCECE)*, Regina, SK, Canada, 2023, pp. 105-110, doi: 10.1109/CCECE58730.2023.10289007.

RESEARCH EXPERIENCE

University of Winnipeg — Winnipeg, Canada
Senior Research Assistant — 2025 – Present

- 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
Mitacs Accelerate Intern — May 2024 – Dec 2024

- 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
CinC Physionet 2025 *2025*

- 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.