Ram J. Zaveri

571 Spruce St, Morgantown, WV, USA · rz0012@mix.wvu.edu · +1 (681)285-2451 · https://www.linkedin.com/in/ramzaveri

EDUCATION

West Virginia University, Morgantown, USA — June 2023 — May 2025 (Anticipated)
M.S. in Computer Science — Cumulative GPA: 4.00/4.00
Thesis Title: Continually adaptive cell instance segmentation, tracking, and tracing

West Virginia University, Morgantown, USA — August 2019 — May 2023
B.S. in Computer Science with a **Minor** in Biology — Cumulative GPA: 4.00/4.00
Distinction: Honors Foundations Scholar, Summa Cum Laude

RESEARCH EXPERIENCE

Graduate Research Assistant — *Vision and Learning Group* — June 2023 — Present

- Developed an efficient test-time adaptation method for object tracking in adverse visibility conditions on edge devices. A 2D framework has been submitted to WACV, 2025 and 3D implementation for volumetric cell tracking is underway.
- Developed a few-shot domain adaptive instance segmentation method for cells with non-convex morphology via specialized contrastive losses. The work was published at ISBI, 2024.
- Designed an online stochastic optimization framework for self-supervised incremental learning on temporally correlated data streams. The preliminary work was accepted at ECCVW, 2024, and the full study encompassing a continual learning framework has been submitted to AAAI, 2025. Currently investigating a scalable biologically plausible online continual learning framework for self-supervised learning.

Undergraduate Research Assistant — *Vision and Learning Group* — January 2020 — May 2023

- Designed a few-shot domain adaptative instance segmentation method for cells with convex morphology and extended it for 3D volumes. The work was published at WACV, 2023 and displayed at the Society for Neuroscience (SfN), 2022 and 2023 with syGlass. Devised a specialized contrastive loss to perform representation learning and received trainee highlight award honorable mention at the 9^{th} Annual BRAIN Initiative Meeting, 2023.
- Developed fine-grained visual classification and detection techniques for 1000 plant species on five organs: leaf, flower, fruit, bark, and high-density leaves. The work was published at CVPRW, 2021.
- Developed an IoT system to receive Fitbit data autonomously and trained machine learning models to infer the desired goals. This work was part of the NSF Artificial Intelligence and Health 2020 workshop.

PEER-REVIEWED PUBLICATIONS

Accepted/Published

- S. Patel*, **R. J. Zaveri***, S. Chambers, Z. Randhawa, and G. Doretto,"Online Stochastic Optimization for Data with Temporal Dependencies," In European Conference on Computer Vision Workshops **(ECCVW)**, 2024.
- **R. J. Zaveri***, V. Brume* and G. Doretto,"Few-Shot Adaptation for Morphology-Independent Cell Instance Segmentation," 2024 IEEE International Symposium on Biomedical Imaging **(ISBI)**, Athens, Greece, 2024, pp. 1-5, doi: 10.1109/ISBI56570.2024.10635320.
- M. R. Keaton, **R. J. Zaveri**, and G. Doretto, "CellTranspose: Few-Shot Domain Adaptation for Cellular Instance Segmentation," in Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision **(WACV)**, Jan. 2023, pp. 455–466.
- M. R. Keaton, **R. J. Zaveri**, M. Kovur, C. Henderson, D. A. Adjeroh, and G. Doretto. Fine-Grained Visual Classification of Plant Species In The Wild: Object Detection as A Reinforced Means of Attention. In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops **(CVPRW)**, 2021.

SKILLS

Programming: Python, C, C++, Java, MATLAB, VHDL, PHP, HTML, CSS, MYSQL
Libraries: PyTorch, TensorFlow, Keras, Scikit Learn, Napari, TorchIO, NumPy, SciPy, pandas, Matplotlib, OpenCV
Other: TorchScript, JAX, HPC, Linux, Git, Selenium, Visual Studio, , Android Studio, Blender, Premiere Pro, After Effects

RELEVANT COURSEWORK

Theoretical & Applied Linear Algebra · Dynamical Systems · Neural Networks · Computer Vision · Neuroscience 1 & 2 · Sensory Neural System & Behavior · Neuromorphic Robotics Control & Modeling · Big Data Engineering