# Sushmita Sarker

sushmitasarkers@unr.edu | Portfolio
Linkedin | GitHub | Google Scholar

## EDUCATION

**University of Nevada, Reno** — Reno, NV
*Ph.D. in Computer Science* — *Aug. 2022 – Dec. 2025*

**University of Nevada, Reno** — Reno, NV
*MS in Computer Science* — *Aug. 2021 – Dec. 2023*

**Gujarat Technological University** — Ahmedabad, India
*BS in Electronics and Communication Engineering* — *Sep. 2013 – Apr. 2017*

## TECHNICAL SKILLS

**Languages**: Python, R, C++, MATLAB, SQL
**Deep/ Machine Learning Libraries**: Tensorflow, Keras, PyTorch, Pandas, Numpy, Matplotlib, Scikit-learn
**Research Area**: AI for Healthcare, Generative AI, Computer Vision, Pattern Recognition, Applied Machine Learning

## SUMMER INTERNSHIP

**AI/ML R&D Summer Intern** — May 2025 – Aug. 2025
*Idaho National Lab* — *Idaho Falls, ID*
- Developing advanced neural architectures for open-set recognition to enable the reliable identification of known and previously unseen wireless signals within the computational data science group.
- Contributing to building adaptable AI systems designed to support dynamic spectrum awareness and strengthen the security of next-generation communication systems.

**Network Engineer Intern** — June. 2016 – Aug. 2016
*Teletalk BD Ltd* — *Dhaka, Bangladesh*
- Actively optimized and maintained 3G network infrastructure across the core and radio access network, utilizing a broad range of technologies such as GSM, 4G, SDH, and MGW.

## RESEARCH EXPERIENCE

**Graduate Research Assistant** — Aug. 2021 – Present
*University of Nevada, Reno* — *Reno, NV*
- Conducted research at the intersection of AI and medical imaging, leveraging advanced neural architectures—including CNNs, transformers, and cutting-edge generative models (diffusion and consistency model) to improve invasive mass detection in mammograms.
- Collaborated with the Mining Lab to design and implement a scalable storage repository for high-volume raw datasets, significantly accelerating data accessibility and usability across multi-disciplinary research teams.
- Engineered end-to-end workflows for large-scale 3D photogrammetry using Structure from Motion and Multi-View Stereo, enabling high-fidelity point cloud generation for spatial analytics and environmental modeling.

## TEACHING EXPERIENCE

**Instructor** — Aug. 2023 – Dec. 2023
*University of Nevada, Reno* — *Reno,NV*
- Course taught: GRAD 778: Elements of Research Computing
  Designed and delivered comprehensive instruction to over 100 graduate students, covering essential research components within the field of computational engineering.

**Graduate Teaching Assistant** — Aug. 2021 – Dec. 2021 & Aug. 2022 – Dec. 2022
*University of Nevada, Reno* — *Reno, NV*
- Course taught: ENGR100

**Lecturer\Asst. Teacher** — Dec. 2017 – June 2021
*South Point School & College* — *Dhaka, Bangladesh*
- Course taught: Cambridge IGCSE A Level Physics

## PROJECTS

**Enhanced Mass Segmentation Using Optimized U-Net**| *Tensorflow* | GitHub

**Multi-View Mammogram Classification with Swin-Transformer** | *PyTorch* | GitHub

**Comprehensive Analysis of 3D Shape Classification and Semantic Segmentation** | GitHub

**Score-based Diffusion Generative Classifier** | *PyTorch* | GitHub

**Conditional Diffusion Model for Semantically-Aware 3D Point Cloud Generation** | *PyTorch* | GitHub

**Unsupervised Anomaly Detection for Multivariate Time Series** | *PyTorch* | GitHub

**Generating Synthetic tree point clouds for automated part segmentation** | *PyTorch*

## ACTIVITIES & LEADERSHIP

**Campus Lead-Google Developer Group**                                   Aug. 2024-Aug. 2025

*University of Nevada, Reno*                                                        *Reno, NV*

- As the Lead, I have organized high-impact events and workshops to foster a collaborative technical community on campus. I led a team in developing innovative projects using Google technologies, while closely collaborating with Google Developer Relations to connect students with industry trends in software development, AI, and ML.

## PUBLICATIONS

**Sushmita Sarker**, Prithul Sarker, George Bebis, Alireza Tavakkoli, "MV-Swin-T: Mammogram Classification with Multi-view Transformer", IEEE International Symposium on Biomedical Imaging, 2024. Preprint link

**Sushmita Sarker**, Prithul Sarker, Gunner Stone, Ryan Gorman, Alireza Tavakkoli, George Bebis, Javad Sattarvand, "A Comprehensive Overview of Deep Learning Techniques for 3D Point Cloud Classification and Semantic Segmentation", Machine Vision and Applications 2024. Springer link

Gunner Stone, **Sushmita Sarker**, Jonathan Greenberg, Alireza Tavakkoli, "Generating Synthetic Tree Point Clouds for Deep Learning Applications in Remote Sensing", International Symposium on Visual Computing, 2024. Springer link

**Sushmita Sarker**, Prithul Sarker, George Bebis, Alireza Tavakkoli, "ConnectedUNets++: Mass Segmentation from Whole Mammographic Images", International Symposium on Visual Computing, 2022. Springer link

**Sushmita Sarker**, Prithul Sarker, George Bebis, Alireza Tavakkoli, "Can Score-based Generative Modeling Effectively Handle Medical Image Classification?", IEEE International Symposium on Biomedical Imaging, 2025. Preprint link

*Prithul Sarker, **Sushmita Sarker**, Nicholas Murray, Alireza Tavakkoli, "A Unified Unsupervised Anomaly Detection Framework for Multivariate Time Series", under review*

***Sushmita Sarker**, Gunner Stone, Alireza Tavakkoli, "Guided and Unguided Conditional Diffusion Mechanisms for Structured and Semantically-Aware 3D Point Cloud Generation", under review*

## ACADEMIC ACCOLADES

Outstanding Graduate Student Researcher Award                    University of Nevada, Reno – 2025

- Recognized for exceptional research contributions in AI in healthcare, awarded by the Graduate School and Graduate Student Association.

Nevada Drive Scholar                                                    Aug. 2023 – May. 2025

- Selected twice as a Nevada Scholar for the Nevada DRIVE program, promoting Doctoral Research in Innovation, Vision, and Excellence.

Indian Council for Cultural Relations Scholarship                    Aug. 2013 – Apr. 2017

- Awarded the Fulbright scholarship for undergraduate studies at a prestigious engineering institute in Ahmedabad, India, awarded to students with exceptional academic achievement and leadership potential.

## REVIEWING & EDITORIAL SERVICE

**Journal Reviewed:**

- IEEE Access; Computers & Graphics; Journal of Selected Topics in IET Image Processing; Journal of Selected Topics in Applied Earth Observations and Remote Sensing