Sushmita Sarker

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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
Deep/ Machine Learning Libraries: Tensorflow, Keras, PyTorch, Pandas, Numpy, Matplotlib, Scikit-learn
Research Area: Applied ML, Generative AI, AI in Healthcare, Computer Vision and Pattern Recongnition

Research Experience

Graduate Research Assistant — Aug. 2021 – Present
University of Nevada, Reno — *Reno, NV*

- Conducted research on the application of artificial intelligence in medical imaging, focusing specifically on neural network methodologies such as convolutional neural networks (CNN), transformers, and generative models (diffusions) for processing mammogram images to detect invasive masses.
- Collaborated with the Mining lab to develop a storage repository that efficiently stores vast amounts of raw data in its native format, streamlining data accessibility for diverse end-users across the organization.
- Developed workflows for large-scale photogrammetric data processing, leveraging Structure from Motion (SfM) and Multi-View Stereo (MVS) to enable precise 3D reconstructions and enhance point cloud accuracy for spatial analysis.

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: ENGR100

Assistant Teacher — Dec. 2017 – June 2021
South Point School & College — *Dhaka, Bangladesh*

- Course taught: Cambridge IGCSE A Level Physics

Projects

Enhanced Mass Segmentation from Whole Mammographic Images 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

Google Developer Group at Campus in UNR current

University of Nevada, Reno *Reno, NV*

- Serving as the Lead of the GDG at UNR, I organized impactful events and workshops, led a team in the development of diverse projects, and collaborated with Google's Developer Relations team to enhance the campus technical community.

Summer Internship

Network Engineer Intern June. 2016 – Aug. 2016

Teletalk BD Ltd *Dhaka, Bangladesh*

- Conducted in-depth research and collaborated with a team of experts in the field of mobile communications.

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.

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?", under review*

*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

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.