






Mohammad Samiul Arshad

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EXPERIENCE

AI Research Intern, Hanwha Vision

Aug. 2023 - Nov 2023

- Developed AI solutions for the detection, tracking, and segmentation to meet business needs
- Optimized segmentation models to run in real-time on edge devices

Research Assistant, Robotic Vision Lab, UTA

Aug. 2018 - Aug. 2023

- Developed the *first* deep learning solution for colored point cloud generation
- Designed neural solution for 3D reconstruction that removed outliers and significantly improved reconstruction quality

Research Assistant, ASSIST Lab, UTA

Aug. 2016 - Aug. 2018

- Analyzed and developed movement tracking algorithm on a pressure-sensitive floor for assisted living

Senior Software Engineer, TwinBit

Jan. 2014 - Aug. 2016

- Researched, analyzed, and designed new products, developed following requirements, and deployed to the cloud.
- Managed a team of developers in building software applications.

EDUCATION

Ph.D. in Deep Learning, Computer Vision

Aug. 2016 - Aug. 2023

The University of Texas at Arlington

Arlington, Texas

SKILLS

- **AI/ML:** Detection, Segmentation, 3D Reconstruction, Generative Models, LLMs, DNN Quantization, Optimization, Diffusion Models, NeRF, SAM, Recommendation, Regression Analysis
- **Programming:** Python, C++, C, Objective C, Matlab, Java, Bash
- **Library/Framework:** PyTorch, Tensorflow, JAX, OpenCV, Open3D, ONNX, OpenAI, TensorRT
- **Tools/Services:** Git, Pandas, MySQL, Docker, mlFlow, Kubernetes, Azure ML, AWS, Slurm, LiDAR, CI/CD, GNU/Linux, L^AT_EX

PROJECTS

Single View Reconstruction

- Devised a novel neural learning framework that accurately reconstructs 3D object from a single RGB image [1]
- Proposed method shows significant improvement ($\approx 3\%$) over current baselines in occluded surface recovery

Open Surface Reconstruction

- Designed neural architecture and inference algorithm to reconstruct 3D open surfaces
- The reconstructed data contains significantly less noise than existing methods [2], [3]

PCGAN

- Devised the **first** neural architecture to generate dense, colored 3D point clouds [4]

Sign Language Detection and Recognition

- Designed a novel algorithm that automatically identifies Bengali sign language from single 2D image [5]
- The proposed algorithm achieved $\approx 8\%$ **improvement** on identification accuracy over the state of the art

SELECTED PUBLICATIONS

- [1] **M. S. Arshad** and W. J. Beksi, "LIST: Learning Implicitly from Spatial Transformers for Single-View 3D Reconstruction," in *Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV)*, 2023, pp. 9321–9330.
- [2] **M. S. Arshad** and W. J. Beksi, "IPVNet: Learning Implicit Point-Voxel Features for Open-Surface 3D Reconstruction," *Journal of Visual Communication and Image Representation*, vol. 97, p. 103970, 2023, ISSN: 1047-3203. DOI: <https://doi.org/10.1016/j.jvcir.2023.103970>.
- [3] **M. S. Arshad** and W. J. Beksi, "Automated reconstruction of 3d open surfaces from sparse point clouds," in *Proceedings of the IEEE International Symposium on Mixed and Augmented Reality (ISMAR) Workshops*, 2022, pp. 216–221.
- [4] **M. S. Arshad** and W. J. Beksi, "A progressive conditional generative adversarial network for generating dense and colored 3d point clouds," in *Proceedings of the International Conference on 3D Vision (3DV)*, IEEE, 2020, pp. 712–722.
- [5] A. M. Jarman, **M. S. Arshad**, N. Alam, and M. J. Islam, "An automated bengali sign language recognition system based on fingertip finder algorithm," *International journal of electronics and informatics*, vol. 4, no. 1, pp. 1–10, 2015.