

# ACHLESHWAR LUTHRA

**Objective:** Full-time Computer Vision/ML Engineer Roles

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## Education

**Carnegie Mellon University - School of Computer Science**

*Master of Science in Computer Vision*

**Dec 2023**

*Pittsburgh, PA*

**Birla Institute of Technology and Science Pilani, Pilani Campus**

*Bachelor of Engineering in Electrical and Electronics Engineering*

**May 2022**

*Pilani, India*

## Experience

**Futurewei Technologies (earlier Huawei R&D)**

*Graphics Research Intern*

**May - Aug 2023**

*Santa clara, CA*

- Identified limitations in the existing research on modelling motion using implicit representations such as NeRF and proposed Deblur-NSFF, a method that can perform novel space-time synthesis from videos subject to motion blur or out-of-focus blur
- Achieved an improvement of 4.3%, and 12.8%, in PSNR and SSIM respectively, and a decrease of 28.12% in LPIPS value on modified NVIDIA Dynamic Scenes Dataset, and submitted our work to WACV 2024

**University of Illinois Urbana Champaign**

*Research Intern (mentor: Prof. Narendra Ahuja)*

**Feb - Dec 2021**

*Champaign, IL*

- Extracted 3D models of pigs from videos using self-supervised learning facilitated by Pytorch3D's neural mesh renderer
- Synthesized a dataset that includes segmentation masks to complement re-projection loss-based training algorithm
- Delivered results on pig tracking and pose-estimation, contributing to a CVPRW 2021 ORAL paper on multi-view tracking

**University of California Berkeley**

*Research Intern (mentor: Prof. Jitendra Malik)*

**Jan - Mar 2021**

*Berkeley, CA*

- Evaluated algorithms such as MeshRCNN, 3D-R2N2, Occupancy Networks, and GenRe for single-view 3D reconstruction of inanimate objects on a novel dataset - Amazon-Berkeley Objects dataset
- Executed preprocessing and benchmarking experiments on ABO dataset, which was accepted to CVPR 2022

## Projects

**3D Kitchen Understanding** (ongoing) | *MSCV Capstone Project with Prof. David Held*

**January 2023 -**

- Explored multiple tools/research works such as Minkowski Engine, MediaPipe, VitPose, and Segment Anything Model (SAM) to develop an automated data annotation system for 3D Scene Understanding
- Extending the idea of SAM to 3D scenes while also infusing semantic knowledge to the model using geometric cues

## Selected Publications (Google Scholar Link)

- Deblur-NSFF: Neural Scene Flow Fields for Blurry Dynamic Scenes

**Achleshwar Luthra**, Shiva Gantha, Heather Yu, Liang Peng, Zongfang Lin, and Xiyun Song

*IEEE/CVF Winter Conference on Applications of Computer Vision 2024 (under review)*

- LVRNet: Lightweight Image Restoration for Aerial Images under Low Visibility (github)

**Achleshwar Luthra\***, Esha Pahwa\*, and Pratik Narang

*(Student Abstract) Proceedings of the AAAI Conference on Artificial Intelligence 2023 ORAL*

- ABO : Dataset and Benchmarks for Multi-View Object Understanding

Jasmine Collins, Shubham Goel, Kenan Deng, **Achleshwar Luthra**, Leon Xu, Erhan Gundogdu, Xi Zhang, Tomas F Yago

Vicente, Thomas Dideriksen, Himanshu Arora, Matthieu Guillaumin, and Jitendra Malik

*IEEE / CVF Computer Vision and Pattern Recognition Conference (CVPR) 2022*

- Eformer : Edge Enhancement based Transformer for Medical Image Denoising

**Achleshwar Luthra\***, Harsh Sulakhe\*, Tanish Mittal\*, Abhishek Iyer, and Santosh Yadav

*Computer Vision for Automated Medical Diagnosis Workshop in conjunction with ICCV 2021*

## Relevant Coursework

- Advanced Computer Vision
- Learning for 3D Vision
- Geometry-based Methods in Vision\*
- Introduction to Machine Learning
- Visual Learning and Recognition
- Introduction to Robot Learning\*