

Omkar Ashok Chittar

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EDUCATION

University of Maryland, College Park

Master of Engineering in Robotics — 3.96 CGPA

College Park, MD

Aug. 2022 – May 2024

MIT World Peace University

Master of Technology in Design — 9.2 CGPA

Pune, India

July 2019 – Jan. 2022

TECHNICAL SKILLS

Languages: Python, C/C++, MATLAB, SQL, R

Developer Tools: Git, Docker, GCP, VS Code, Linux, ROS, Jupyter Notebooks, Carla, Colab, AWS, Kubernetes

Libraries: pandas, NumPy, Matplotlib, PyTorch, Tensorflow, Keras, Scikit, OpenCV, PIL

Computer Vision Applications: 3D computer vision, multi-view geometry, SfM/SLAM, Generative Models, Object Detection & Tracking, Semantic Segmentation, Inpainting, Depth Estimation

Modeling and Analysis: SolidWorks, ANSYS, Simulink, MoveIt, Gazebo, RViz

EXPERIENCE

Computer Vision Engineer

June 2019 – June 2022

Sakar Robotics

Pune, India

- Led the development and implementation of computer vision algorithms for robotic applications in civil construction, focusing on SLAM, 3D reconstruction, depth estimation, and point cloud processing
- Successfully improved mapping accuracy by 20% in indoor navigation settings using *OpenVSLAM*
- Collaborated to integrate robotic perception technologies in construction, reducing project timelines by 15%

Project Intern

Jan. 2021 – Jan. 2022

DRDO

Pune, India

- Pioneered a cutting-edge bird's eye view system for gait analysis, enhancing posture monitoring accuracy by 30%
- This approach significantly improved the understanding and optimization of user mobility and balance, enhancing the precision of gait assessment and exoskeleton support adjustments

Proprietor & Teacher

June 2018 – June 2022

SAI Classes

Pune, India

- Mentored 100+ undergraduate students in STEM subjects, achieving a 95% student satisfaction rate; effectively managed a team of 10 faculty members
- Delivered engaging lectures in Linear Algebra, Calculus, Image Processing, Computer Vision and Machine Learning, leading to a 40% improvement in student grades and comprehension

PROJECTS

Point Cloud Classification and Segmentation | *PyTorch3D, Python*

Dec. 2023

- Implemented PointNET architecture for classification amongst three classes and segmentation of different parts of the point clouds, achieving 97% accuracy for classification and 90% for segmentation
- Analyzed the model's robustness against rotation and number of points for both classification and segmentation

Optical Flow Based Segmentation | *Tensorflow*

Oct. 2023

- Created a high-quality, real-time background subtraction pipeline
- Utilized GMFlow encoder-decoder Network for enhanced pose-aware video segmentation, achieving a Dice Coefficient of 0.96, significantly reducing motion blur issues in video segmentation

Semantically Segmented Bird's Eye View Generation | *PyTorch, Python*

Sept. 2023

- Orchestrated a pipeline for generating semantically segmented BEV from four Ego-mounted cameras
- Streamlined input image processing, feeding data to Spatial Transformer units in a modified UNet Architecture, achieving an Mean Intersection over Union of 71.92, surpassing Inverse Perspective Mapping performance

Single View to 3D Reconstruction | *PyTorch3D, Python*

May 2023

- Innovated a system using deep learning for 3D reconstruction from single-view RGB images
- Deployed Pix2Vox model for 3D voxel grid, and PointNetFCAE model for point clouds and meshes reconstruction achieving average F1 scores of 54.37, 86.92 and 73.15 respectively