Sudhansh Peddabomma

+1 (858)-518-9808 | speddabomma@ucsd.edu | sudhansh6.github.io | sudhansh-peddabomma | sudhansh6

Computer Vision Engineer, passionate about AR/VR, specializing in 3D reconstruction, SLAM, and real-time perception

EDUCATION

University of California San Diego Sep 2023 - Mar 2025
Master of Science in Computer Science and Engineering, Specialization in Artificial Intelligence **GPA 4.00/4.00**
- Key Courses - Machine Learning Systems, Computer Vision, Robotics, Recommender Systems, Convex Optimization

Indian Institute of Technology Bombay Jul 2019 - Jul 2023
Bachelor of Technology with **Honors** in Computer Science and Engineering, Minor in **Entrepreneurship** **CPI 9.66/10**
- Key Courses - Advanced Image Processing, Reinforcement Learning, Machine Learning, Linear Algebra, Probabilistic Theory

EXPERIENCE

Computer Vision Intern | **Duality AI** Jun 2024 - Sep 2024
- Built scalable pipelines integrating COLMAP, Reality Capture, nerfstudio and Unreal Engine to generate high-fidelity **Gaussian Splatting** digital twins in synthetic environments, reducing digital-twin generation time **by 40%**
- Developed a 3D reconstruction workflow using point-cloud registration to improve robustness for *feature-less objects*
- Collaborated with **Autodesk** to validate **Unreal Engine** simulations for robotics tasks; leveraging structured domain randomization to reduce Sim2Real gap and increase **mAP-50 by 15%** for object detection and segmentation

Data and Applied Scientist Intern | **Microsoft India** May 2022 - Jul 2022
- Developed a **decision-tree ranker** to recommend emails without user queries, improving **Outlook search** capabilities
- Integrated data pipelines across team infrastructures, combining user-specific features from large-scale context logs
- Proposed **hierarchical feature-sets** for the ranker, reducing latency for recommendations and improving recall

KEY PROJECTS

Inverse Rendering with 2D Gaussian Splatting | [Report] Mar 2024 - May 2024
- Developed a novel inverse rendering framework in **CUDA** to recover PBR properties of a scene using **2D Gaussian Splatting**
- Improved normal map **MAE by 15%** over the current SOTA methods, achieving superior novel-view synthesis and relighting

Real-time 3D Perception for Home Robots, Graduate Student Researcher Sep 2023 - Sep 2024
- Investigated real-time **dense visual SLAM** methods using **NeRFs** and **Gaussian Splatting** for robot navigation
- Integrated object segmentation, grasp-pose estimation, and 3D mapping on the Fetch robot via **ROS**, demonstrating a novel tabletop object rearrangement algorithm that reduced cost by **20%** compared to the state-of-the-art approach

3D Tomography with Primal-Dual Neural Networks, UCL Research Intern May 2021 - Jul 2023
- Developed a stochastic neural-network architecture of primal-dual algorithm for **online reconstruction of 3D volumes** from tomographic projections, achieving **99.6 % structural similarity** in challenging low-dosage conditions
- Built a Python library with custom gradient operators for reconstructing volumes in a **single pass**, reducing compute requirements by **up to 5x** over SOTA learning-based approaches for cone vector tomography

- **Image Colorization GAN**. Deployed a web-app to color grayscale images using pix2pix **U-Net architecture** GAN
- **ExoFly Team Lead.** Led a team of 35 to design a controller for an eVTOL vehicle on **Simulink** using an EKF for **sensor fusion**
- **Sudoku Solver**. Created an **Augmented Reality** app to solve Sudoku from live feed, with robust **real-time performance**

PUBLICATIONS

1. J. Hu, J. Szczekulski, **S. Peddabomma**, H. Christensen, **Scalable Planning for optimal Tabletop Object Rearrangement** *Published at International Conference on Robotics and Automation (ICRA) 2025*
2. S. Banerjee, **S. Peddabomma**, R. Srivastava, J. Saunderson, A. Rajwade, **Identification and Correction of Permutation Errors in Compressed Sensing Based Group Testing** *Published at IEEE Acoustics, Speech, and Signal Processing 2025*
3. **S. Peddabomma**, S. Banerjee, R. Srivastava, A. Rajwade, **A likelihood based method for compressive signal recovery under Gaussian and saturation noise** in Elsevier Signal Processing 2024 DOI: 10.1016/j.sigpro.2023.109349

SKILLS

Programming	C++, C, Python, CUDA, MATLAB, Linux and Bash, SQL, HTML, Javascript
Tools & Software	PyTorch, ROS, TensorFlow, scikit-learn, OpenCV, Open3D, Angular, Matplotlib
Expertise in	3D Reconstruction, Generative AI (LLMs, GANs), SLAM, Geometric Vision, Statistical Image Processing