Sudhansh Peddabomma

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EDUCATION

University of California San Diego Sep 2023 - Jun 2025
Master of Science in Computer Science and Engineering **GPA 4.00/4.00**

- Key Courses - Advanced 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 - Image Processing, Reinforcement Learning, Machine Learning and Deep Learning

EXPERIENCE

Computer Vision Intern | **Duality AI** Jun 2024 - Present

- Engineered pipelines to produce high-fidelity synthetic environments with **Gaussian Splatting** to train vision models
- Developed techniques to register models generated from **multi-view camera poses** for more accurate reconstructions
- Collaborating with **Autodesk** to evaluate the robustness of models trained on synthetic data obtained from **Unreal engine** on real-world robot deployment tasks such as object detection and pose estimation

Data and Applied Scientist Intern | **Microsoft India** May 2022 - Jul 2022

- Developed a **decision-tree ranker** for Outlook to recommend emails to users based on their past interactions
- Engineered a dataset by extracting user-dependent email attributes from context logs in a large-scale data pipeline
- Demonstrated an optimized ranking model using hierarchical feature sets, resulting in higher recall and click rate

RESEARCH PROJECTS

3D Perception for Home Robots Sep 2023 - Present
Graduate Student Researcher, *Supervisor: Prof. Henrik Christensen* UC San Diego

- Implemented dense SLAM algorithms with **NeRFs** and **Gaussian Splatting** for real-time 3D scene reconstruction
- Developed real-time **object segmentation** and 3D mapping methods for receptacle detection and grasp pose estimation

3D Tomography with Primal-Dual Neural Networks May 2021 - Jul 2023
UCL Research Internship, *Supervisor: Prof. Marta Betcke* University College London

- Developed a stochastic neural-network architecture of primal-dual algorithm for **online reconstruction of 3D volumes** from tomographic projections and obtained **99.6 % structural similarity** in challenging low-dosage conditions
- Built a Python library with custom network layers in Tensorflow for reconstruction using cone-vector tomography

Image Reconstruction in Saturated Compressed Sensing | [Report] Jul 2022 - Jun 2023
Bachelor's Thesis, *Supervisor: Prof. Ajit Rajwade* IIT Bombay

- Proposed a novel likelihood maximization technique to recover **signals, images, and audio** from compressed measurements and obtained **20% lower RMSE** over the state of the art methods even with high saturation effects
- Established robust performance guarantees with statistical methods and published a journal paper on this work

Key Projects

- **Image Colorization GAN**. Deployed a web-app to color grayscale images using pix2pix **U-Net architecture** GAN
- **Autonomous Robot**. Developed a Roomba-like robot with **visual-SLAM** using EKF and A* path planning on ROS
- **Sudoku Solver**. Created an **Augmented Reality** app to solve Sudoku from live feed, with robust real-time performance

PUBLICATIONS

1. **S. Peddabomma**, S. Banerjee, R. Srivastava, A. Rajwade, **A likelihood based method for compressive signal recovery under Gaussian and saturation noise** in Signal Processing 2024 DOI: 10.1016/j.sigpro.2023.109349
2. **S. Peddabomma**, M. Betcke, A. Hauptmann, W. Hong, E. Macneil, K. Rullan, **Learned Stochastic Primal Dual for large scale and fully 3D tomographic reconstruction** *Special Issue IOP 2023 (preprint)*

SKILLS

Programming	C++, C, Python, MATLAB, Java, Bash, SQL, HTML, Javascript
Tools & Software	PyTorch, ROS, TensorFlow, scikit-learn, OpenCV, Angular, Matplotlib, Arduino
Expertise in	3D Reconstruction, Artificial Intelligence, Image Processing, Robotics