Sudhansh Peddabomma

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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 - ML Systems, Software Engineering, Recommender Systems, Statistical NLP, Advanced Computer Vision

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, Network Security

EXPERIENCE

Machine Learning 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%**
- Collaborated with **Autodesk** to benchmark **Unreal Engine** simulations for robotics tasks, building scalable workflows the improved **mAP-50 by 15%** for object detection and segmentation in real-world deployment

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
- Built data pipelines across team infrastructures to combine user-specific features from large-scale context logs
- Proposed **hierarchical feature-sets** for the ranker, reducing latency for recommendations and improving recall

KEY PROJECTS

VS Code Journal Plugin — Sept 2024 - Dec 2024
- Led a team in an **Agile** environment in a full-cycle software engineering project to develop a VS Code journal plugin, integrating keyboard shortcuts, search, TODO tracking, and file tagging to enhance developer productivity
- Engineered **CI/CD pipelines** with Cypress (E2E testing), unit testing, and Electron, ensuring a modular and maintainable **Typescript** codebase with linting, documentation, and ADRs for long-term usability

Mirror AI: Deployable Personas — Oct 2024 - Dec 2024
- Designed an **agentic LLM architecture** with **LangGraph** to mirror user personalities, creating interactive digital personas
- Built a **full-stack platform** using **Supabase** and **Vercel** for secure hosting, user authentication, and data management

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

3D Tomography with Primal-Dual Neural Networks — May 2021 - Jul 2023
- 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 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
- **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 — DOI:10.48550/arXiv.2411.10899
2. **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	Python, Javascript, Typescript, C++, Linux and Bash, Python, MATLAB, Java, SQL, HTML
Tools & Software	PyTorch, CUDA, ROS, TensorFlow, React, Django, Angular, Git, Docker, Supabase
Expertise in	Generative Modeling, AI Systems and Model Deployment, 3D Reconstruction, Statistical Image Processing