Sudhansh Peddabomma

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Education

2023 - 2025 **University of California San Diego**
Master of Science in Computer Science and Engineering **GPA 4.00/4.00**
Courses Undertaken - Robotics, Recommender Systems, Quantum Cryptography, Convex Optimization

2019 - 2023 **Indian Institute of Technology Bombay** **CPI 9.66/10**
Bachelor of Technology with **Honors** in Computer Science and Engineering, Minor in **Entrepreneurship**
Courses Undertaken - Computer Vision, Reinforcement Learning, Advanced Image Processing

Experience

Microsoft India (R&D) Pvt. Ltd., *Data and Applied Scientist Intern* May 2022 - Jul 2022
Zero Query Email Suggestions Hyderabad, India
- Developed a **Decision-Tree ranker** to recommend email entities with no search input on **Outlook** to increase click rate
- Optimized the Outlook email preference ranker by enhancing the existing hierarchical feature set used for ranking

FinIQ India Pvt. Ltd., *Software Engineering Intern* Nov 2021 - Apr 2022
Backsolving Pricing Models and Financial Markup Language Pune, India
- Enhanced the firm's trading platform by integrating **Black-Scholes** and **Heston Stochastic Local Volatility** models
- Applied **Monte Carlo simulations** to accurately price vanilla and barrier options, and target redemption forwards
- Designed a versatile markup language for verifying price quotes, lowering the trade discard rate significantly

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)*

Research and Key Projects

3D Perception for Home Robots Sep 2023 - Present
Supervisor: Prof. Henrik Christensen, UC San Diego
- Developing a robust object mesh-completion algorithm for bounding box estimation during manipulation of items
- Implementing dense-SLAM with **Neural Radiance Fields** and **Gaussian Splatting** for real-time scene reconstruction

Likelihood Maximization for Saturated Compressed Sensing [Report] Jul 2022 - Jun 2023
- Proposed a novel likelihood-based approach to reconstruct **signals, image and audio** from saturated measurements
- Utilized advanced statistical modeling techniques to guarantee performance and conducted extensive experiments
- Obtained **15% lower RMSE** as compared to state of the art methods even with high saturation levels

3D Tomography with Primal-Dual Neural Networks May 2021 - Jul 2023
- Developed a stochastic **Learned Primal-Dual** algorithm for **online** reconstruction of 3D volumes from CT scans
- Created a Python library to conduct experiments on **cone-vector** tomography with custom Tensorflow layers
- Achieved remarkable results, including up to **99.6%** structural similarity, under challenging **Low-Dose conditions**

Image Colorization application [Code] [App] May 2021 - Jul 2021
- Developed and **deployed** a **Pix2Pix GAN** web-application to transform grayscale images to colored ones
- Implemented a **U-Net architecture** for the generator and utilized **patch discriminator** for effective translation
- Created a real-time **Augmented Reality** Sudoku Solver app with robust performance in various environments

Skills

Programming	C++, C, Python, MATLAB, Java, Bash, VHDL, SQL, HTML, Javascript
Tools & Software	Docker, ROS, OpenCV, TensorFlow, PyTorch, CUDA, Node, Angular, Matplotlib, Arduino, Raspberry Pi
Expertise in	Computer Vision, Reinforcement Learning, Statistical Modeling, Image Processing

Roles and Achievements

- **Teaching Assistant, UCSD** | *Quantum Cryptography* Jan 2024 - Present
- **Team Leader at Exofly** | *Tech Team IITB* Mar 2022 - Apr 2023
  - Led a **40-member team** and secured funding to design a manned, compact, and lightweight **eVTOL vehicle**
  - Designed a controller on **Simulink**, incorporating fail-safes and **sensor fusion** with an **Extended Kalman Filter**
- Secured the prestigious **KC Mahindra** scholarship of INR 500,000 for post-graduate studies (2023)
- Secured **3rd** rank in **Statistics Olympiad** conducted by **AIMSCS** across India and Sri Lanka (2019)