

Chinmay Talegaonkar

🏠 Website | ✉ ctalegaonkar@ucsd.edu | 🔗 LinkedIn | 🐙 GitHub | 👤 Google Scholar

EDUCATION

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| University of California, San Diego <i>Ph.D. in Electrical and Computer Engineering</i> Advisor: Prof. Nicholas Antipa | San Diego, CA Sept 2022 – Present GPA: 4.0/4.0 |
| University of California, Los Angeles <i>M.S. in Electrical and Computer Engineering</i> Advisor: Prof. Achuta Kadambi | Los Angeles, CA 2019 – 2021 GPA: 4.0/4.0 |
| Indian Institute of Technology, Bombay <i>B.Tech. in Electrical Engineering</i> <i>Minor in Computer Science</i> Advisor: Prof. Ajit Rajwade | Mumbai, India 2015 – 2019 GPA: 9.07/10.0 |

PUBLICATIONS

Volumetrically Consistent 3D Gaussian Rasterization

Chinmay Talegaonkar*, Yash Belhe*, Ravi Ramamoorthi, Nicholas Antipa
Under Review

Pose Estimation of Buried Deep-Sea Objects using 3D Deep Learning Models

Chinmay Talegaonkar*, Jerry Yan*, Nicholas Antipa, Eric Terrill, Sophia Merrifield
OCEANS Conference and Expositions, 2024. [Paper](#) [Code](#)

Visual Physics: Discovering Physical Laws from Videos

Chinmay Talegaonkar*, Pradyumna Chari*, Yunhao Ba*, Achuta Kadambi
ICCP 2020 Poster, CVPR 2020 Tutorial. [arXiv PrePrint](#)
Journal Version: *On learning mechanical laws of motion from video using neural networks.*
IEEE Access, 2023. [Paper](#)

Compressive Phase Retrieval Under Poisson Noise

Chinmay Talegaonkar, Parthasarathi Khirwadkar, Ajit Rajwade
IEEE International Conference on Image Processing (ICIP) 2019. [Paper](#)

Performance Bounds For Tractable Poisson Denoisers With Principled Parameter Tuning

Chinmay Talegaonkar, Ajit Rajwade
IEEE Global Conference on Signal and Information Processing (GlobalSIP) 2018. [Paper](#)

WORK EXPERIENCE

Research Intern

Qualcomm AI

San Diego, CA
June 2023 – Sept 2023

- Developed a memory-efficient generalizable NeRF-like method to create human avatars from monocular videos. Achieved comparable accuracy to existing methods. *Patent Pending*
- Invented a point-based 3D scene representation for human modeling that reduces memory usage by 10x and training time by 100x respectively.
- Engineered an end-to-end pipeline to estimate SMPL mesh, and segmentation masks from videos.

Senior Deep Learning Engineer

Intrinsic.ai

Mountain View, CA
May 2022 – Sept 2022

- Led the development of a novel HDR fusion algorithm, resulting in higher pose estimation accuracy for difficult lighting scenarios.
- Implemented a deep learning-based feature extractor to improve stereo matching and point cloud generation from a multi-view camera setup.

Senior Deep Learning Engineer

Palo Alto, CA

Akasha Imaging - **acquired** by Intrinsic.ai (an Alphabet company) in May 2022.

May 2021 – May 2022

- Developed an end-to-end deep learning based multi-view pose estimation pipeline with more than 99% reliability and sub-millimeter accuracy. This led to the company's first product order.
- Engineered a synthetic data generation pipeline to generate training data for segmentation and keypoint estimation algorithms.
- Contributed to tools for ML Ops, CI/CD testing, pose evaluation frameworks, and data collection setups.

Deep Learning Software Intern

Santa Clara, CA

NVIDIA

June 2020 – Sept 2020

- Implemented a linearized thread launching algorithm to optimize CUDA kernels for backpropagation in 2D and 3D convolution layers in popular CNN architectures, resulting in 30% speedup.
- Enabled complex valued convolution kernels in *CUTLASS* achieving more than 90% compute resource utilization.

AI/ML Compute DevTech Intern

Bengaluru, India

NVIDIA

May 2018 – July 2018

- Developed CUDA kernels for optimizing routing layer and back-propagation in capsule networks resulting in a 2x speedup
- Parallelized end-to-end implementation of *DBscan* using *CUTLASS* and *thrust* libraries for **NVIDIA Rapids** [🔗](#) platform

RESEARCH PROJECTS

Volumetrically Consistent 3D Gaussian Rasterization

Aug 2024 - Present

Guide: Prof. Nicholas Antipa and Prof. Ravi Ramamoorthi

Developed a method for fast, volumetrically consistent rasterization of 3D Gaussians. Demonstrated improvements over 3D Gaussian Splatting for novel view synthesis and Computed Tomography.

Defocus Blur Rendering with 3D Gaussian Splatting

Jan 2024 - Present

Guide: Prof. Nicholas Antipa and Prof. Ravi Ramamoorthi

Devised an approach for accurately rendering 3D Gaussians with defocus blur by incorporating lens blur in the splatting process. Achieved higher fidelity blur rendering compared to 3D Gaussian Splatting for large aperture sizes. Demonstrated applications in focal stack rendering.

Monocular Depth Diffusion Models with Defocus Cues

Jan 2024 - Present

Guide: Prof. Nicholas Antipa

Identified depth ambiguities in monocular depth diffusion models caused by biases in training data. Developed a test-time optimization method utilizing defocus blur and coded aperture masks to resolve depth ambiguities. The proposed approach also enables metric depth estimation through these models.

Novel View Synthesis in the Presence of Phase Optics

Sept 2022 - Dec 2022

Guide: Prof. Ravi Ramamoorthi

Explored NeRF-based view synthesis for sparse views captured with a microlens array. Simulated multi-view data through a microlens array in Mitsuba3. Achieved improved detail recovery with microlens array data compared to pinhole cameras in ultra-sparse configurations. [Code](#) [🔗](#) [Report](#) [🔗](#)

KEY SKILLS

Programming Languages: C & C++, CUDA, Bash, Python, MATLAB

Frameworks: Pytorch, OpenCV, scikit-learn, numpy, scipy, pandas, blender, mitsuba3, Slang.D

Development Tools: Github, Jenkins, Google Cloud, Docker

TEACHING ASSISTANT

- Software Systems Lab UCLA, Winter 2020
- Reinforcement Learning UCLA, Spring 2020
- Introduction to Computer Vision UCLA, Winter 2021
- Computational Imaging UCSD, Spring 2024