## Kaustubh Prashant Sadekar

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Education	
<ul> <li>Ph.D. Computer Science, Portland State University</li> <li>Department of Computer Science</li> <li>Research: Time-of-flight sensing using single photon cameras in resource-constrained computer science</li> </ul>	June 2022 - Present
<ul> <li>B.Tech. Electrical Engineering, Pandit Deendayal Petroleum University</li> <li>School Of Technology Department of Electrical Engineering</li> <li>Robotics club president, IEEE student chapter representative, Motor controller team lead</li> </ul>	<i>August 2014 - May 2018</i> I for prototype electric car project
Skills	
Languages and libraries : Python, C++, OpenCV, libcamera, Open3D, PCL, PyTorch, PyTo Platforms : Blender, Mitsuba3, Meshroom, ROS, Meshlab, Shining 3D, FAF Hardware : Intel Realsense D345i, OAK-D, FARO Focus, EinScan Pro, NVID	orch3D RO Scene, Visual Studio, MATLAB, Arduino IDE IA Jetson Nano, ARM-STM32f4, Arduino, Raspberry-Pi
Experience	
<ul> <li>Portland State University</li> <li>Graduate Research Assistant At Computational Imaging Lab</li> <li>Resource efficient representations for single photon 3D cameras. GPU-accelerated, vector</li> </ul>	June 2022 - Ongoing Advisor: Prof. Atul Ingle prized SPAD-LiDAR dataset generation pipeline
<ul> <li>Indian Institute of Technology Gandhinagar</li> <li>Research Fellow At The Computer Vision Imaging and Graphics Lab</li> <li>3D reconstruction of cultural heritage sites using FARO terrestrial scanner and EinScan st</li> <li>Point cloud and mesh post-processing pipelines for structured light 3D scans. Custom ph</li> </ul>	August 2020 - March 2022 PI: Prof. Shanmuganathan Raman ructured light scanner. Proposals for research grants notogrammetry pipeline for 3D reconstruction
<ul> <li>Indian Institute of Technology Bombay</li> <li>Research Associate At The Autonomous Robots and Multi-robot Systems (ARMS) Lab</li> <li>Streaming and surveillance system for spherical robots using fisheye camera. Created Or</li> </ul>	May 2019 - August 2020 PI: Prof. Leena Vachhani nniCV - library for omnidirectional cameras <b>%</b> Read Docs
Publications and Patents	
3D Sensing with Single-Photon Cameras for Resource-Constrained Applications Kaustubh Sadekar, David Maier, Atul Ingle   & Project Page	CCD Workshop CVPR 2024
Single-Photon 3D Imaging with Equi-Depth Photon Histograms Kaustubh Sadekar, David Maier, Atul Ingle   <b>%</b> Project Page	ECCV 2024
Methods for scaling a spherical robot (Patent number 507996) Leena Vachhani, Vaibhav Nandkumar Kadam, Abhishek Gupta, Kaustubh Sadekar, Animesh Singho	Indian Patents 2024 al
A robot system with an upwards-facing camera (Patent number 462647) Leena Vachhani, Kaustubh Sadekar, Vaibhav Nandkumar Kadam, Animesh Singhal, Abhishek Gupt	Indian Patents 2023 a
Shadow Art Revisited: A Differentiable Rendering Based Approach	WACV 2022
Kaustubh Sadekar, Ashish Tiwari, Shanmuganathan Raman   🗞 Project Page 🗞 Paper	
LS-HDIB: A Large Scale Handwritten Document Image Binarization Dataset	ICPR 2022
Kaustubh Sadekar, Ashish Tiwari, Prajwal Singh, Shanmuganathan Raman 💊 Project Page� Pap	per
TreeGCN-ED: Encoding Point Cloud using a Tree-Structured Graph Network	Pacific Graphics 2023
Prajwal Singh, Kaustubh Sadekar, Shanmuganathan Raman   % Paper	

## Major Projects \_

Lensless Imaging: Replacing a Camera Lens with Scotch Tape! (CS 510: Computational Imaging Project)

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• Developed a low-cost diffuser-based lensless camera, its calibration and reconstruction pipeline, and synthetic dataset generation with Blender.

Simulating Single Photon Cameras for Supervised Depth Estimation

To Be Open Sourced 🗞 Project Page

· Physics-based modeling of SPAD sensor measurements simulating the effect of photon randomness, laser characteristics, and ambient light

## Affordable Stereo Camera

To Be Open Sourced 🗞 Project Page

• Stereo camera with USB webcams. Supporting software for stereo calibration, multiple depth estimation algorithms, and RGB-D data processing

## OmniCV - Library for omnidirectional cameras

Open Sourced Code And Documentation Available On GitHub 🗞 Read Docs 🗞 Code

• ROS compatible library with different models of omnidirectional cameras (C++ and Python support). CI-CD workflow using GitHub actions