

BHARGAV SACHIN GHANEKAR

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Final year PhD student with 5+ years of research experience in Computational Photography and Computer Vision.

Published in CVPR, IEEE venues; equipped with “full-stack” knowledge of imaging systems. Seeking full-time positions.

EDUCATION

Rice University

PhD student, Electrical and Computer Engineering (3.96/4.00) (Advisor: Prof. Ashok Veeraraghavan)

Houston, TX

Fall 2025 (Exp.)

Carnegie Mellon University

M.S. in Electrical and Computer Engineering (3.92/4.00)

Pittsburgh, PA

Dec 2019

Indian Institute of Technology Madras

B.Tech. in Engineering Physics (9.37/10.00)

Chennai, India

Jul 2018

SKILLS

Computer Vision: CNNs, Vision Transformers, 3D Reconstruction, Depth Imaging, Imaging System Simulations

Programming: Python, C/C++, MATLAB, PyTorch, JAX, TensorFlow, Linux, OpenCV, AWS, Google Cloud, Docker, CAD

Experimental: Optical systems, Lasers, Spatial Light Modulators, 3D printing, Two-photon lithography

WORK EXPERIENCE

NPI Vision Software Engineer Intern

Feb – Aug 2020 & May – Aug 2019

Intuitive Surgical, Sunnyvale CA

- Developed software test fixture tools and algorithms for performance evaluation of endoscope camera systems
- Conceptualized and designed color calibration target, resulting in an improved automated color calibration test fixture
- Explored deep learning and vision-based methods for performance evaluation of color stereo-vision systems

ACADEMIC RESEARCH WORK

Vision-based tool tracking for surgical skill assessment (Publications: 1)

Aug 2023-ongoing

- Designed advanced computer vision models to precisely track surgical tool tips, enabling automated surgical skill analysis, culminated in a conference paper at *IEEE ISBI 2025* ([link](#)).

Laser speckle contrast imaging for blood flow sensing

Aug 2023-ongoing

- Developing laser speckle contrast imaging methods for detection and estimation of deep artery blood flow
- Designed, created and tested a wearable imaging device capable of sensing deep artery flow changes
- Conceptualized event camera-based laser speckle sensing for remote photoplethysmography

Lensless Imaging and Reconstruction

Dec 2022-May 2023

- Designed & constructed novel lensless cameras and trained deep learning models for high-fidelity image reconstruction

Snapshot 3D sensing using polarization and defocus (Publications: 2)

Sep 2020-June 2024

- Devised imaging systems that synergistically combine polarization, defocus cues for passive, single-shot 3D sensing
- Conceptualized and validated a novel polarizer-phase mask Point Spread Function (PSF) encoding technique, resulting in acceptance at *IEEE TPAMI 2022* ([link](#)).
- Architected a compact 3D sensing system by integrating dual-pixel sensors with coded apertures
- Implemented an end-to-end deep learning model for RGB-D reconstruction from coded dual-pixel image captures, which was accepted in the main conference track at *CVPR 2024* ([link](#)).

2-D phase unwrapping for interferometric radar imaging (Publications: 2)

Aug 2017-May 2018

- Formulated 2D phase unwrapping algorithms using higher-order TV methods, resulted in an *IEEE TGRS 2021* [publication](#).

MENTORED RESEARCH PROJECTS

Multi-modal remote physiological signals estimation (Publications: 1 pending)

Jan 2024-May 2025

Mentored a junior graduate student's first-author research, resulting in a conference submission

Vision-based algorithm for accurate helmet-head alignment

May 2024-ongoing

Guided student team in developing computer vision algorithms for precise wearing of a therapeutic helmet by user.

Resulted in an invention disclosure being filed.

AWARDS

Best Paper Award, IEEE ICCP 2022. For “PS²F: Polarized Spiral Point Spread Function for Single-Shot 3D Sensing”

Sri Jandhyala Lakshmi Kantam and Srimati Sitamahalakshmi Prize, IITM 2018. 2nd best academic performance in dept.