

RESEARCH INTERESTS

My research interests lie in developing computational imaging techniques for medical applications. I currently work on optical imaging systems that exploit the wave nature of light to extract information from the environment that a traditional camera cannot. The goal of my research is to develop a general theory for such systems and demonstrate their utility in critical imaging applications like medical imaging deep inside tissue and industrial fabrication. Going forward, I would like to pursue medicine and take these methods into clinical application in radiology.

EDUCATION

Carnegie Mellon University *Aug 2017 – present*
PhD in Robotics (ongoing)

Indian Institute of Technology Bombay *Jul 2012 – Jun 2017*
Dual Degree (Bachelor & Master of Technology), Electrical Engineering

PROFESSIONAL POSITIONS

Graduate Research Assistant *Aug 2017 – present*
Robotics Institute, Carnegie Mellon University

Visiting PhD Student in Radiology *May 2019 – Aug 2019*
Massachusetts General Hospital

Research Assistant *Aug 2016 – Aug 2017*
Department of Electrical Engineering, Indian Institute of Technology Bombay

Undergraduate member *Aug 2013 – Aug 2017*
IIT Bombay Mars Rover Team

Undergraduate member *Aug 2013 – Aug 2017*
Krittika – Astronomy Club of IIT Bombay

Undergraduate member *Jan 2016 – Aug 2017*
Vision, Graphics, Imaging & Learning (ViGIL) Lab, Department of Computer Science,
Indian Institute of Technology Bombay

Pandemic Safety Officer for COVID-19 *April 2020 – present*
Computational Imaging Lab, Robotics Institute, Carnegie Mellon University

JOURNAL PUBLICATIONS

Interferometric Transmission Probing with Coded Mutual Intensity
ACM Transactions on Graphics, 2020
A. Kotwal, A. Levin and I. Gkioulekas

REFEREED CONFERENCE PUBLICATIONS

Signal Sensing and Reconstruction for a Novel Multi-Source Static Computed Tomography System
IEEE International Conference on Acoustics, Speech and Signal Processing, 2020
A. Kotwal, A. Cramer, D. Wu, K. Yang, W. Krull, I. Gkioulekas, R. Gupta

Designing constrained projections for compressed sensing: mean errors and anomalies with coherence
IEEE Global Conference on Signal and Information Processing, 2018
D. Shah, **A. Kotwal** and A. V. Rajwade

Joint desmoking, specular removal, and denoising of laparoscopy images via graphical models and Bayesian inference
International Symposium on Biomedical Imaging, 2017
A. Baid, **A. Kotwal**, R. Bhalodia, and S. Awate

Joint desmoking and denoising of laparoscopy images
International Symposium on Biomedical Imaging, 2016
A. Kotwal, R. Bhalodia and S. Awate

Field robotics, astrobiology and Mars analogue research on the Arkaroola Mars Robot Challenge
Australian Space Research Conference, 2014
Clarke, J. *et al.*

THESES	Optimizing Sensing Matrices for Compressed Sensing Master's Thesis, Department of Electrical Engineering, Indian Institute of Technology Bombay, 2012 A. Kotwal
INVITED TALKS AND PRESENTATIONS	"Interferometric Transmission Probing with Coded Mutual Intensity", ACM SIGGRAPH 2020 (talk) — " —, ACM SIGGRAPH 2020 (poster presentation) — " —, IEEE Conference on Computer Vision and Pattern Recognition, 2020 (poster presentation) — " —, International Conference on Computational Photography 2020 (poster presentation)
TEACHING EXPERIENCE	Teaching Assistant , 16-720 – Computer Vision Carnegie Mellon University, Spring 2020 Teaching Assistant , 15-463 – Computational Photography Carnegie Mellon University, Fall 2018 Teaching Assistant , EE708 – Information Theory Indian Institute of Technology Bombay, Spring 2017 Teaching Assistant , EE638 – Estimation and Identification Indian Institute of Technology Bombay, Fall 2016 Teaching Assistant , CS736 – Algorithms for Medical Image Processing Indian Institute of Technology Bombay, Spring 2016 Teaching Assistant , CS663 – Digital Image Processing Indian Institute of Technology Bombay, Fall 2015 Student Facilitator , Indian National Astronomy and Astrophysics Olympiad Program
AWARDS	Undergraduate Research Award for an outstanding Master's thesis, Indian Institute of Technology Bombay, 2017 Represented India and won a gold medal at the 6 th International Olympiad on Astronomy and Astrophysics, Brazil, 2012 Represented India and won a bronze medal at the 5 th International Earth Sciences Olympiad, Italy, 2011 Awarded KVPY Scholarship, 2011, by Department of Science and Technology, Government of India for outstanding students interested in basic sciences
PROFESSIONAL ACTIVITIES	Member , Institute of Electrical and Electronics Engineers (IEEE) (2020 - present)
OTHER INFORMATION	Citizenship: India Languages: Marathi (native), English (fluent), Hindi (fluent)