

Achuta Kadambi

Assistant Professor of Electrical Engineering
Assistant Professor of Computer Science
University of California, Los Angeles

Email: achuta@ucla.edu
Lab Website: <http://visual.ee.ucla.edu>

Academic Mission

Imaging the invisible, for safer autonomy and more equitable digital health.

Education

PhD	MIT Media Lab / EECS	2018
MS	Yale	2012
BS	Berkeley	2011

Appointments

Assistant Professor	UCLA Computer Science	2021-
Assistant Professor	UCLA Electrical / Computer Engineering	2018-
Co-founder	Akasha Imaging	2018-
Co-founder	Vayu Robotics	2022-

Awards

2021	NSF CAREER Award
2021	DARPA Young Faculty Award
2021	Army Research Office Young Investigator Award (ARO YIP)
2021	National Academy of Engineering (NAE) Frontiers of Engineering
2020	Google Faculty Award
2020	Senior Member National Academy of Inventors
2019	Forbes 30 under 30, Science
2019	NSF CRII Research Initiation Award
2019	Sony Imaging Young Faculty Award
2018	Best Paper Award, ICCP
2016	Lemelson-MIT Student Prize
2016	Rahamimoff Award, US-Israel Science Foundation
2016	Best Papers Special Issue Selection, ICCV
2016	Best Presentation Award, CVPR VIEW
2015	World Changing Idea, Scientific American
2014	Qualcomm Innovation Fellowship
2013	Draper 5-year PhD Fellowship
2011	Regent and Chancellor Scholar, UC Berkeley

Awards won by Students

2021	Cisco PhD Fellowship (P. Chari)
2020	Guru Krupa Graduate Fellowship, UCLA (C. Talegaonkar)
2019	Best Undergraduate Demo, Annual Research Review (A. Padhye et al.)
2019	Best Poster Award, runner up, SoCal Machine Learning Day (Y. Ba et al)

Visiting Positions

2017	Visiting Researcher, Harvard Medical School, Boston MA
2016	Visiting Student, Technion Electrical Engineering, Israel

- 2015 Intern, Microsoft Research, Redmond WA
- 2014 Intern, Mitsubishi Electric Research Labs (MERL), Cambridge MA

Invited Talks

- 2021 MIT AeroAstro Department (Cambridge, MA)
- 2021 Boston University Electrical Engineering Department (Boston, MA)
- 2021 EPFL, Lausanne Switzerland (Rescheduled - COVID)
- 2021 UCLA School of Medicine Grand Rounds, Los Angeles CA (Los Angeles, CA)
- 2021 Snap Inc. (Virtual)
- 2021 Cornell AI in Medicine Seminar (Virtual)
- 2021 ETH Zurich Computer Vision Seminar (Zurich, Switzerland)
- 2021 Amazon + UCLA Science Hub Kickoff Event (Los Angeles, CA)
- 2021 Pixel Cafe at UCSD (Virtual)
- 2021 UC Berkeley Bioengineering, Guest Lecturer for Medical Device Design (Virtual)
- 2021 Black in Neuro Panel, Imperial College London (Virtual)
- 2021 Army Research Lab A2I2 Summit (Virtual)
- 2021 ICCV GigaVision Workshop (Virtual)
- 2021 CLEO Panel on AI and Photonics (Virtual)
- 2021 Army Research Lab Workshop on Synthetic Data (Virtual)
- 2020 SPIE Workshop on Computational Imaging (Virtual)
- 2020 Army Research Lab, Adelphi MD
- 2020 CVPR Visual Physics, Seattle WA
- 2019 DARPA/MEC workshop on AI, San Jose CA
- 2019 Stanford EE Department, Stanford CA
- 2019 MIT Media Lab, Cambridge MA
- 2019 Lemelson-MIT EurekaFest, Cambridge MA
- 2019 Computational Light Transport Summit, Banff Canada
- 2019 Indian Institute of Science, EE Department, Bangalore India
- 2019 Machine Learning Summer School, Bangalore India
- 2019 Honeywell Technology Symposium, Phoenix AZ
- 2019 Annual Research Review, UCLA, Los Angeles CA
- 2018 University of California, Los Angeles CA
- 2018 Carnegie Mellon University, Pittsburgh PA
- 2018 MIT CSAIL, Cambridge MA
- 2017 University of Tokyo, Tokyo JP
- 2017 Cymer Semiconductor Equipment, San Diego CA
- 2017 Computer Vision and Information Processing Society of Japan, Nagoya JP
- 2016 Honeywell Technology Symposium, Phoenix AZ
- 2016 Columbia CS, New York City, NY
- 2016 Cornell Tech, CS New York City, NY
- 2016 Mitsubishi Electric Research Lab (MERL), Boston MA

2016 University of Pennsylvania GRASP Lab, Philadelphia PA
 2016 Princeton CS, Princeton, New Jersey
 2016 Weizmann Institute of Science, Rehovot Israel
 2016 Technion CS Department, Haifa Israel
 2016 Mass General Hospital (MGH), Boston MA
 2016 OSA Invited Talk, Heidelberg Germany
 2016 Analog Devices, Cambridge MA
 2015 Computational Imaging Summit, Dagstuhl Germany
 2015 Microsoft Research, Redmond WA
 2014 Qualcomm Research, San Diego CA
 2014 Technion, Haifa Israel
 2014 Microsoft iToF Workshop, Ein Gadi Israel
 2014 IIT-Bombay, Bombay India
 2013 Nokia Research, Bangalore India

Professional Service

SIGGRAPH Professional Advocacy
 Guest Editor, Applied Sciences, Special Issue on Computational Photography
 Program chair, CVPR CCD 2021
 Program chair, CVPR CCD 2020
 Program chair, Industry relations, ICCP 2020
 Program committee, Pacific Graphics 2019
 Program committee, ICCP 2019
 Program committee, CVPR 2019
 Program committee, ICCP 2018
 Program committee, CVPR 2018
 Program committee, ICCP 2017
 Program committee, CVPR 2017
 Program committee, ICCV PBDL Workshop 2017
 Program committee, CVPR 2016
 Reviewer, SIGGRAPH
 Reviewer, SIGGRAPH Asia
 Reviewer, ICCV
 Reviewer, CVPR
 Reviewer, ECCV
 Reviewer, ICCP
 Reviewer, IEEE Trans Comp Imaging (TCI)
 Reviewer, Various OSA journals
 University Service, UCLA, MS admissions committee
 University Service, UCLA, PhD thesis award committee
 University Service, MIT, undergrad admissions committee

University Service, Lemelson-MIT student prize selection committee
IEEE, ACM, and OSA member

Textbook

- TB.1 A. Bhandari, **A. Kadambi**, R. Raskar, *Computational Imaging (450 pages)*. MIT Press, 2022 (E-PDF at imagingtext.github.io)

Papers

- P.22 A. Vilesov, P. Chari, A. Armouti, A. B. Harish, K. Kulkarni, A. Deoghare, L. Jalilian, and **A. Kadambi**. *Blending Camera and 77 GHz Radar Sensing for Equitable, Robust Plethysmography*. **SIGGRAPH** 2022 (conditionally accepted)
- P.21 Z. Wang, Y. Ba, P. Chari, O. Bozkurt, G. Brown, P. Patwal, N. Vaddi, L. Jalilian, and **A. Kadambi**, *Synthetic Generation of Face Videos with Plethysmograph Physiology*. **CVPR** 2022
- P.20 **A. Kadambi**, *Achieving Fairness in Medical Devices*. **Science** 2021 no. 372.6537
- P.19 A. Kalra, B. Brown, G. Stoppi, R. Agrawal, and **A. Kadambi**. *Towards Rotation Invariance in Object Detection*. **ICCV** 2021.
- P.18 **A. Kadambi** and A. Madni, *Artificial Intelligence: From Ancient Greeks to Self-Driving Cars and Beyond*, **Nat'l Academy of Engineering Bridge** 2021
- P.17 Y. Ba, A. Gilbert, F. Wang, J. Yang, R. Chen, Y. Wang, B. Shi and **A. Kadambi**. *Deep Shape from Polarization*. **ECCV** 2020.
- P.16 K. Tanaka, Y. Mukaigawa, and **A. Kadambi**. *Polarized Non-line-of-sight Imaging*. **CVPR** 2020
- P.15 A. Kalra, V. Taamazyan, S. Rao, K. Venkataraman, R. Raskar, and **A. Kadambi**. *Deep Polarization Cues for Transparent Object Segmentation*. **CVPR** 2020 (**Top 3% paper**)
- P.14 P. Chari, C. Talegaonkar, Y. Ba, and **A. Kadambi**. *Visual Physics: Discovering Physical Laws from Video*. arXiv:1911.11893, 2019

- P.13 Y. Ba, G. Zhao, and **A. Kadambi**. *Blending Diverse Physical Priors with Neural Networks*. arXiv:1910.00201, 2019
- P.12 K. Tanaka, N. Ikeya, T. Takatani, H. Kubo, T. Funatomi, V. Ravi, **A. Kadambi**, and Y. Mukaigawa. *Time-resolved Far Infrared Light Transport Decomposition for Thermal Photometric Stereo*. IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**), 2020
- P.11 T. Maeda, Y. Wang, R. Raskar, and **A. Kadambi**. *Thermal Non-line-of-sight Imaging*. IEEE **ICCP** 2019
- P.10 T. Maeda, **A. Kadambi**, Y. Schechner, and R. Raskar. *Dynamic heterodyne interferometry*. IEEE **ICCP** 2018 (**Best Paper Award**)
- P.9 **A. Kadambi** and R. Raskar. *Rethinking Machine Vision Time of Flight with GHz Heterodyning*. IEEE **Access** 2017
- P.8 **A. Kadambi**, V. Taamazyan, B. Shi, and R. Raskar. *Depth sensing using geometrically constrained polarization normals*. In **IJCV** 2017 (**Best Papers Issue**)
- P.7 **A. Kadambi**, J. Schiel, and R. Raskar. *Macroscopic Interferometry: Rethinking Depth Estimation with Frequency-Domain Time of Flight*. IEEE **CVPR** 2016 (**Oral, 3% acceptance rate**).
- P.6 **A. Kadambi**, H. Zhao, B. Shi, and R. Raskar. *Occluded Imaging with Time of Flight Sensors*. In ACM Transactions on Graphics (pres **SIGGRAPH** 2016)
- P.5 **A. Kadambi**, V. Taamazyan, B. Shi, and R. Raskar. *Polarized 3D: enhanced 3D sensing fusing depth and polarization cues*. **ICCV** 2015 (**Oral, 3% acceptance rate**)
- P.4 N. Naik, **A. Kadambi**, C. Rhemann, S. Izadi, R. Raskar and S. Kang. *A light transport model for mitigating multipath interference in ToF sensors*. In **CVPR** 2015.
- P.3 A. Bhandari, **A. Kadambi**, R. Whyte, C. Barsi, M. Feigin, A. Dorrington, and R. Raskar. *Resolving multi-path interference in time-of-flight imaging via modulation frequency diversity and sparse regularization*. **Optics Letters**, 2014
- P.2 **A. Kadambi**, A. Bhandari, R. Whyte, A. Dorrington and R. Raskar. *Demultiplexing Illumination via low-cost sensing and nanosecond coding*. **ICCP** 2014.
- P.1 **A. Kadambi**, R. Whyte, A. Bhandari, L. Streeter, C. Barsi, A. Dorrington, and R.

Raskar. *Coded time of flight cameras: sparse deconvolution to address multipath interference and recover time profiles*. ACM Transactions on Graphics (pres SIGGRAPH Asia 2013).

US Patents (17 utility patents granted, 35 pending)

US.17 *Systems and methods for camera exposure control*. **US Patent 11,290,658**

US.16 *Systems and methods for surface modeling using polarization cues*. **US Patent 11,270,110**

US.15 *Systems and methods for characterizing object pose detection and measurement systems*. **US Patent 11,195,303**

US.14 *Methods and apparatus for gigahertz time-of-flight imaging*. **US Patent 11,181,623**

US.13 *Depth maps with polarization cues*. **US Patent 10,557,705**

US.12 *X-ray imaging from temporal measurements*. **US Patent 10,527,562**

US.11 *Time-of-flight sensor*. **US Patent 10,488,520**

US.10 *Fluorescent lifetime with periodically modulated light*. **US Patent 10,337,993**

US.9 *Depth maps with polarization cues*. **US Patent 10,260,866**

US.8 *Methods and apparatus for time-of-flight imaging*. **US Patent 10,191,154**

US.7 *Fluorescence lifetime imaging with pulsed light*. **US Patent 10,190,983**

US.6 *Methods and apparatus for virtual sensor array*. **US Patent 9,897,699**

US.5 *Intensity-based depth sensing system and method*. **US Patent 9,897,698**

US.4 *Methods and apparatus for coded time-of-flight camera*. **US Patent 9,778,363**

US.3 *Depth sensing using optical pulses and fixed coded aperture*. **US Patent 9,638,801**

US.2 *Methods and apparatus for demultiplexing illumination*. **US Patent 9,451,141**

US.1 *Methods and apparatus for multi-frequency camera*. **US Patent 9,405,008**