

Akash Sharma

CONTACT	akashsharma@cmu.edu https://akashsharma02.github.io	(last updated May 2025)
EDUCATION	Carnegie Mellon University Ph.D. candidate in Robotics, Advisor: Michael Kaess Proposed Thesis: Self-supervised perception for tactile dexterity Thesis Committee: Michael Kaess (CMU) Shubham Tulsiani (CMU) Guanya Shi (CMU) Mustafa Mukadam (Amazon) Jitendra Malik (UC Berkeley, Meta) GPA: 4.11/4.33 M.S. in Robotics, Advisor: Michael Kaess Thesis: Incorporating semantic structure in SLAM Sri Jayachamarajendra College of Engineering B.E. in Electronics and Communication GPA: 9.61/10.00	2021 - 2026 2019 - 2021 2013 - 2017
RESEARCH EXPERIENCE	FAIR at Meta , Pittsburgh, PA Visiting Researcher <i>Perception for dexterous manipulation</i> : Working on self-supervised (SSL) representation learning for tactile sensors. Currently working on generative modeling of dexterous manipulation tasks using vision and touch modalities. Published at CoRL 2024 and CoRL 2025. The Robotics Institute, CMU , Pittsburgh, PA Graduate Researcher Assistant <i>Semantic SLAM with Object Landmarks</i> : Worked on a SLAM system that reconstructs an environment as a collection of objects. The system fuses sensor data from RGBD cameras, object detection and segmentation networks in a non-linear optimization framework to estimate object shape and color, 6DoF pose and camera poses. Published at ICRA 2021	2023 - 2025 2019 - 2025
PUBLICATIONS	[In submission] Jay Karhade, N. V. Keetha, T. Gupta, Y. Zhang, Akash Sharma , Sebastian Scherer, Deva Ramanan. "Any4D: A Unified Model for 4D Scene Reconstruction with Flexible Conditioning on Scene and Camera Priors." Carolina Higuera*, Akash Sharma* , T. Fan*, C. K. Bodduluri, B. Boots, M. Kaess, M. Lambeta, T. Wu, Z. Liu, F. R. Hogan [†] , M. Mukadam [†] . "Tactile Beyond Pixels: Multisensory Touch Representations for Robot Manipulation." <i>9th Annual Conference on Robot Learning (CoRL), 2025</i> [Oral: ~6% acceptance rate] (* equal contribution) Akash Sharma , C. Higuera, C. K. Bodduluri, Z. Liu, T. Fan, T. Hellebrekers, M. Lambeta, B. Boots, M. Kaess, T. Wu, F. R. Hogan, M. Mukadam. "Self-supervised perception for tactile skin covered dexterous hands" <i>9th Annual Conference on Robot Learning (CoRL), 2025</i> Zhao-Heng Yin, C. Wang, L. Pineda, F. Hogan, C. K. Bodduluri, Akash Sharma , P. Lancaster, I. Prasad, M. Kalakrishnan, J. Malik, M. Lambeta, T. Wu, P. Abbeel, M. Mukadam. "DexterityGen: Foundation Controller for Unprecedented Dexterity" <i>Robotics: Science and Systems (RSS), 2025</i> pdf Carolina Higuera*, Akash Sharma* , C. K. Bodduluri, T. Fan, M. Kalakrishnan, M. Kaess, B. Boots, M. Lambeta, T. Wu, M. Mukadam. "Sparsh: Self-supervised touch representations for vision-based tactile sensing." <i>8th Annual Conference on Robot Learning (CoRL), 2024</i> pdf code (* equal contribution) Ming-Fang Chang, Akash Sharma , Michael Kaess, Simon Lucey. "Neural Radiance Fields with LiDAR Maps" <i>IEEE/CVF International Conference on Computer Vision (ICCV), 2023</i> pdf Ruoyang Xu, Wei Dong, Akash Sharma , Michael Kaess. "Learned Depth Estimation of 3D Image Radar for Indoor Mapping" <i>IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems (IROS) 2022</i> pdf	

	Akash Sharma , Wei Dong, Michael Kaess. “Compositional Scalable Object SLAM” <i>IEEE Intl. Conf. on Robotics and Automation (ICRA) 2021</i> pdf code	
PROFESSIONAL EXPERIENCE	Reality Labs Research, Meta , Redmond, WA <i>Research Scientist Intern, Surreal Vision team</i> Summer 2022 <i>Representation Learning for robust odometry</i> : Proposed an end-to-end transformer that learns a 3D representation from a stream of multi-modal data (vision and IMU) to predict odometry. Predicted odometry was auto-regressively composed to estimate the trajectory of (👁️ Project Aria) AR glasses.	
	Fyusion Inc. , San Francisco, CA <i>Research Intern</i> Summer 2021 <i>Free viewpoint view synthesis for car interiors</i> : Developed a neural radiance field representation-based novel view synthesis method tuned for free viewpoint synthesis specific for 360° outward facing cameras. I experimented with multiple different methods in both image-based rendering as well as physically based rendering.	
	OpenCV (Google Summer of Code) , Virtual / Pittsburgh, PA <i>Student Developer</i> Summer 2020 <i>3D Spatial Hashing for Large scale dense reconstruction</i> : Implemented and extended Kinect Fusion using spatial hashing and submap based mapping for reconstruction of large scale environments. (👁️ blog)	
	Infinera , Bangalore, India <i>Software Engineer</i> 2017 - 2019 <i>Improved the optical device infrastructure</i> : Developed a configurable system infrastructure software for optical amplifier devices to monitor faults and performance. <i>Enabled fast optical traffic startup</i> : Bypassed an auto-discovery mechanism in the optical amplifier hardware for improved laser power control and faster optical power startup. Mentored incoming undergraduate students in the optical line system team.	
PRESS COVERAGE	<i>Advancing embodied AI through progress in touch perception, dexterity, and human-robot interaction</i> AI at Meta, blog 📄 2024 TechRadar 📄 2024 VentureBeat 📄 2024 Business Today 📄 2024 Interesting Engineering 📄 2024 Imaginative 📄 2024 The Decoder 📄 2024 MarkTechPost 📄 2024	
TEACHING	<i>Teaching Assistant</i> : Probabilistic Graphical Models (Prof. Andrej Risteski) Fall 2022 <i>Teaching Assistant</i> : Geometry-based methods for Computer Vision (Prof. Michael Kaess) Fall 2021 <i>Teaching Assistant</i> : Robot Localization and Mapping (Prof. Michael Kaess) Fall 2020 <i>“Guest lecture on algorithms for dense SLAM”</i> 16833 - Robot Localization and Mapping, CMU 2022 16833 - Robot Localization and Mapping, CMU 2020	
TALKS	<i>“Toward multimodal tactile perception for dexterous hands”</i> . Boston Dynamics, Research (Atlas) 2025 Foam Robotics lab, CMU (invited talk) 2025 <i>“Self-supervised perception for tactile dexterity”</i> . Neuroagent lab, CMU (invited talk) 2025 <i>“Sparsh: SSL touch representations for tactile sensing”</i> . Franka Robotics, GmbH (invited talk) 2024 Conference, FAIR at Meta 2024 FAIR Embodied AI seminar 2024 <i>“Self-supervised learning in Vision”</i> . GUM Reading Group, Meta. 2024 <i>“ViTs for mean-teacher distillation with no labels”</i> . Misc-Reading Group at CMU. 2022 <i>“Learning a multimodal state representation for odometry estimation”</i> . Surreal team RL-R, Meta. 2022	
MENTORSHIP	<i>Angela Chen</i> , RI (PhD) Peer Mentor Program 2022 <i>Mrinal Verghese</i> , RI (MSR) Peer Mentor Program 2020 <i>Mary Hatfalvi</i> , RI (MSR) Mentoring Program 2020	

SERVICE	<i>Thesis committee:</i> Vivek Roy (Now @ Apple)	2022
	<i>Admissions committee:</i> MS Robotics	2021 - 2022
	<i>Conference reviewer:</i> CoRL, ICCV, CVPR, T-RO	2025
	<i>Conference reviewer:</i> CVPR, NeurIPS, RA-L	2024
	<i>Conference reviewer:</i> IROS, ICRA	2022
	<i>Conference reviewer:</i> ICRA	2021