









Akash Sharma

CONTACT	akashsharma@cmu.edu https://akashsharma02.github.io	(last updated Jan 2025)
EDUCATION	Carnegie Mellon University Ph.D. student in Robotics, Advisor: Michael Kaess 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 <i>Visiting Researcher</i> <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. The Robotics Institute, CMU , Pittsburgh, PA <i>Graduate Student Researcher</i> <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 Reality Labs Research, Meta , Redmond, WA <i>Research Scientist Intern, Surreal Vision team</i> <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> <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> <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> <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.	2023 - 2025 2019 - 2025 Summer 2022 Summer 2021 Summer 2020 2017 - 2019
PUBLICATIONS	[In submission] Akash Sharma , C. Higuera, C. K. Bodduluri, T. Fan, T. Hellebrekers, M. Lambeta, B. Boots, M. Kaess, M. Kalakrishnan, T. Wu, M. Mukadam. “Sparsh-skin: Perception via Self-supervision for Dexterous hands covered with tactile skin” [In submission] 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” 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” *IEEE/CVF International Conference on Computer Vision (ICCV)*, 2023 | [pdf](#)

Ruoyang Xu, Wei Dong, **Akash Sharma**, Michael Kaess. “Learned Depth Estimation of 3D Image Radar for Indoor Mapping” *IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems (IROS)* 2022 | [pdf](#)

Akash Sharma, Wei Dong, Michael Kaess. “Compositional Scalable Object SLAM” *IEEE Intl. Conf. on Robotics and Automation (ICRA)* 2021 | [pdf](#) | [code](#)

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
	Maginative 	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
TALKS	16833 - Robot Localization and Mapping, CMU	2020
	<i>“Sparsh: SSL touch representations for tactile sensing”.</i>	
	Franka Robotics, GmbH	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, Meta.	2022
SERVICE	<i>Thesis committee</i> : Vivek Roy (Now @ Apple)	2022
	<i>Admissions committee</i> : MS Robotics	2021 - 2022
	<i>Conference reviewer</i> : CVPR 24-25, NeurIPS 24, RA-L 23-24, IROS 2022, ICRA 22 - 21	
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