

Tarasha Khurana

CONTACT	khurana.tarasha@gmail.com https://www.cs.cmu.edu/~tkhurana/	(last updated Jan 2026)
EDUCATION	Carnegie Mellon University Ph.D. in Robotics, Advisor: Deva Ramanan PhD Thesis: Towards 4D perception with foundational priors Thesis Committee: Deva Ramanan Katerina Fragkiadaki Shubham Tulsiani Carl Vondrick (Columbia) Leonidas J. Guibas (Stanford, Google) M.S. in Robotics, Advisor: Deva Ramanan Thesis: Detecting Invisible People University of Delhi B.E. in Computer Engineering, First Class w/ Distinction	2021 - 2025 2019 - 2021 2014 - 2018
RESEARCH EXPERIENCE	The Robotics Institute, CMU, Pittsburgh, PA <i>Graduate Student Researcher</i> Working on 4D perception for temporal 3D and 2D data, with applications to autonomous navigation. Currently using generative modeling to learn priors over depth data, camera parameters, and object motion patterns. Previously, proposed a new paradigm for forecasting 4D data, and solutions for detection and tracking in extreme occlusions. Published at CVPR 2025, 2023, ICCV 2025, 2021 and ECCV 2022, 2020. IIIT Delhi, Delhi, India <i>Undergraduate Researcher</i> Worked with Prof. Chetan Arora on semantic segmentation and classification. Published at ICIIP 2018 (2x).	2019 - 2025 2016 - 2018
PROFESSIONAL EXPERIENCE	Tesla, Palo Alto, CA <i>Senior Robotics ML Engineer</i> Working on perception problems for Optimus. Boston Dynamics AI Institute, Cambridge, MA <i>Foundation Models Research Intern</i> Worked on video prediction models that use less data by learning from physical priors like registered ego-centric depth. Google Research, Mountain View, CA <i>Student Researcher</i> Worked on adapting image diffusion models like Imagen, for generating long and temporally coherent videos conditioned on a textual script. Argo AI, Pittsburgh, PA <i>Autonomy Research Intern</i> Worked on formulating LiDAR depth completion as a local alignment of dense monocular depth maps for application in far-field multi-object tracking. Staqu Technologies, Gurgaon, India <i>Research Associate (Full-time)</i> Worked in collaboration with IIIT Delhi for the Govt. of India to detect and track low-resolution objects from satellite images. Also developed lip-reading, gait analysis, automatic speech recognition modules for scene monitoring and deployed these surveillance modules on servers in an adversary-proof fashion.	Oct 2025 - May - Dec 2024 Summer 2022 Summer 2020 2018 - 2019
PUBLICATIONS ¹	Kaihua Chen*, Tarasha Khurana* , Deva Ramanan. “Reconstruct, inpaint, finetune: Dynamic view synthesis from monocular videos”. Conference on Neural Information Processing Systems (NeurIPS), 2025. (* equal contribution) Zihan Wang, Jeff Tan, Tarasha Khurana* , Neehar Peri*, Deva Ramanan. “MonoFusion: Sparse-View 4D Reconstruction via Monocular Fusion”. IEEE/CVF International Conference on Computer Vision (ICCV), 2025. (* equal senior authorship)	

	Kaihua Chen, Deva Ramanan, Tarasha Khurana. “Using diffusion priors for video amodal segmentation.” IEEE/CVF Conf. on Computer Vision & Pattern Recognition (CVPR), 2025. Tarasha Khurana, Peiyun Hu, David Held, and Deva Ramanan. “<i>Point cloud forecasting as a proxy for 4D occupancy forecasting</i>.” IEEE/CVF Conf. on Computer Vision & Pattern Recognition (CVPR), 2023. Ali Athar, Jonathon Luiten, Paul Voigtlaender, Tarasha Khurana, Achal Dave, Bastian Leibe, and Deva Ramanan. “<i>BURST: A benchmark for unifying object recognition, segmentation and tracking in video</i>.” IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), 2023. Tarasha Khurana*, Peiyun Hu*, Achal Dave, Jason Ziglar, David Held, and Deva Ramanan. “<i>Differentiable raycasting for self-supervised occupancy forecasting</i>.” European Conference on Computer Vision (ECCV), 2022. (* equal contribution) Tarasha Khurana, Achal Dave, and Deva Ramanan. “<i>Detecting invisible people</i>.” IEEE/CVF International Conference on Computer Vision (ICCV), 2021. Achal Dave, Tarasha Khurana, Pavel Tokmakov, Cordelia Schmid, and Deva Ramanan. “<i>TAO: A large-scale benchmark for tracking any object</i>.” European Conf. on Computer Vision (ECCV), 2020. Spotlight. Tarasha Khurana, Kushagra Mahajan, Chetan Arora, and Atul Rai. “<i>Exploiting texture cues for clothing parsing in fashion images</i>.” IEEE International Conference on Image Processing (ICIP), 2018. Kushagra Mahajan, Tarasha Khurana, Ayush Chopra, Isha Gupta, Chetan Arora, and Atul Rai. “<i>Pose aware fine-grained visual classification using pose experts</i>.” IEEE International Conference on Image Processing (ICIP), 2018.	
	¹Conference acceptance rates: CVPR 2025, 22.1%; CVPR 2023, 25.8%; WACV 2023, 30.5%, ECCV 2022, 28.4%; ICCV 2021, 25.9%; ECCV 2020 Spotlight, 3.2%; ICIP 2018, 47.9%.	
PATENT(S)	[Pending] Tarasha Khurana, Deva Ramanan, Chaithanya Kumar Mummadi, Filipe Condessa. “System and method for predicting diverse future geometries with diffusion models.” US Patent 18/597,297. [Filing] Zihan Wang, Jeff Tan, Tarasha Khurana, Neehar Peri, Deva Ramanan. “Grouping-based motion initialization in sparse-view 4D reconstruction.” [Filing] Zihan Wang, Jeff Tan, Tarasha Khurana, Neehar Peri, Deva Ramanan. “Method and system for four-dimensional video reconstruction of an environment using confidence-aware pixel alignment for geometry initialization.”	
PREPRINT(S)	Tarasha Khurana, Deva Ramanan. “<i>Predicting diverse future geometries with diffusion models</i>.” arXiv preprint arXiv:2404.11554 (2024). Cheng-Yen (Wesley) Hsieh, Kaihua Chen, Achal Dave, Tarasha Khurana, Deva Ramanan. “<i>TAO-Amodal: A benchmark for tracking any object amodally</i>.” arXiv preprint arXiv:2312.12433 (2023).	
HONORS	<i>CVPR Doctoral Consortium</i>, Grant award for 50 graduating PhDs around the world 2025 <i>Rising Stars in EECS</i>, Awarded to 100 women graduates and postdocs in the US 2023 <i>Spotlight</i>, Top 5% of accepted papers at ECCV 2020	
PRESS COVERAGE	<i>Will Autonomous Vehicles Be Safe Within Our Lifetime?</i> Lx News, NBC Universal. [Link] 2022 <i>Staqu Helps Indian Army in Aerial Image Analysis</i>. The Times of India. [Link] 2021 India AI, Govt. of India. [Link] 2020 Business Insider, India. [Link] 2019 CNBC TV18. [Link] 2019	
TALKS	“<i>Scalable 4D understanding via self-supervision</i>”. Tesla. 2025 “<i>Scalable 4D understanding via self-supervision</i>”. Bosch Research. 2025 “<i>Understanding and acting in the 4D world</i>”. RCHI Lab at CMU. 2024 “<i>Argoverse Challenge on 4D Occupancy Forecasting</i>”. CVPR Workshop on Autonomous Driving. 2024 “<i>Building 4D Foundation Models of the World</i>”. Waabi AI. 2023 “<i>Masked 4D Prediction</i>”. Bosch Research. 2023 “<i>Argoverse Challenge on 4D Occupancy Forecasting</i>”. CVPR Workshop on Autonomous Driving. 2023	

	<i>“Teaching Machines to Direct Short Movies”</i> . PhD Intern Research Conference (PIRC) at Google.	2022
	<i>“Self-supervised Occupancy Forecasting”</i> . CMU Argo AI Center for Autonomous Vehicle Research.	2022
	<i>“The Rise of Diffusion Models”</i> . Misc-Reading Group at CMU.	2022
	<i>“Depth-aware Multi-object Tracking”</i> . University of Illinois at Urbana-Champaign.	2021
	<i>“Low-resolution Object Detection in Satellite Images”</i> . Army Tech Seminar, Govt. of India.	2019
	<i>“Low-resolution Object Detection in Satellite Images”</i> . Ministry of Defence, Jaipur, India.	2019
	<i>“Low-resolution Object Detection in Satellite Images”</i> . Ministry of Defence, Delhi, India.	2018
TEACHING	<i>Guest lecture</i> : Recent trends in 4D understanding, CMU 16-720	2025
	<i>Project leader</i> : AI Scholars 2025 Summer Program (for high school students)	2025
	<i>Teaching assistant</i> : 16-720 Introduction to Computer Vision	2022
	<i>Teaching assistant</i> : 16-720 Introduction to Computer Vision	2021
MENTORSHIP	<i>Kaihua Chen</i> , Video amodal segmentation, 4D reconstruction.	2023 - 2026
	<i>Yiming Gong</i> , Videos as robot policy.	2025 - 2026
	<i>Abhikhya Tripathi</i> , Video generative models encode 3D geometry.	2025 - 2026
	<i>Saswat Subhajyoti Mallick</i> , 4D generation.	2025
	<i>Raneem Zekeria</i> , CMU Pre-college AI Scholars Program.	2025
	<i>Xin Lin</i> , CMU Pre-college AI Scholars Program.	2025
	<i>Khuslen Gan-Ochir</i> , CMU Pre-college AI Scholars Program.	2025
	<i>Tracy Castro Guzman</i> , CMU Pre-college AI Scholars Program.	2025
	<i>Corey Davis</i> , CMU Pre-college AI Scholars Program.	2025
	<i>James Tcheng</i> , Path to AI Research (PAIR) Mentorship Program.	2024 - 2025
	<i>Zihan Wang</i> , (co-mentored w/ Neehar Peri) Sparse-view 4D reconstruction.	2023 - 2024
	<i>Cheng-yen (Wesley) Hsieh</i> , Track any object amodally.	2022 - 2023
LEADERSHIP	<i>Nupur Kumari</i> , RI (PhD) Peer Mentor Program	2022
	<i>Mohamed Elhag</i> , CMU AI Mentoring Program	2020
	<i>Nupur Kumari</i> , RI (MSR) Peer Mentor Program	2020
	<i>Roundtable</i> : With CMU SCS President’s Advisory Board	2025
	<i>Organizer</i> : Workshop on 4D Vision: Modeling the Dynamic World, CVPR	2025
	<i>Challenge host</i> : 2nd ArgoVerse2.0 4D Occupancy Forecasting Challenge, CVPR	2024
	<i>Organizer</i> : 2nd Workshop on Tracking and Its Many Guises, CVPR	2023
	<i>Challenge host</i> : 1st ArgoVerse2.0 4D Occupancy Forecasting Challenge, CVPR	2023
SERVICE	<i>Organizer</i> : Robust Video Scene Understanding, CVPR	2021
	<i>Organizer</i> : Object Tracking & its Many Guises Workshop, ECCV	2020
	<i>Challenge host</i> : TAO Multi-object Tracking Challenge, ECCV	2020
	<i>Workshop Program Chair</i> : 4D Vision: Modeling the Dynamic World, CVPR	2025
	<i>Area Chair</i> : BMVC	2025
	<i>Conference reviewer</i> : ICCV, CVPR, ICLR.	2025
	<i>Thesis committee</i> : Jeff Tan, MSR Thesis: 4D human reconstruction from monocular video.	2025
	<i>Qualifier committee</i> : Junyu Nan, PhD Qualifier.	2024
	<i>Thesis committee</i> : Neehar Peri, MSR Thesis: Long-tail 3D object detection.	2023
	<i>Conference reviewer</i> : ICCV.	2023
	<i>Admissions committee</i> : MS Robotics	2022
	<i>Conference reviewer</i> : ECCV, CVPR.	2022
	<i>Admissions committee</i> : MS Robotics	2021
	<i>Conference reviewer</i> : ICCV, CVPR, ICML.	2021
	<i>Conference reviewer</i> : NeurIPS, ICML.	2020