

# Patrick Rim

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**Research Interests** Building embodied AI agents with multimodal {vision + range/language} perception for 3D tasks {reconstruction + generation}. Adaptive and robust sensor fusion {camera + lidar/radar} in challenging and dynamic real-world settings {continual + unsupervised}.

**Education** **Yale University** 2024 – Present  
*Ph.D. in Computer Science*  
Advisor: Prof. Alex Wong | Yale Vision Lab

**Caltech** 2020 – 2024  
*B.S. in Computer Science, Minor in Information and Data Sciences*  
GPA: 4.3/4.3 (Best Academic Record in Computer Science)

**Industry Experience** **NVIDIA**, Research Scientist Intern Feb 2026 – Present  
Mentors: Jaehyun Jung, Ekta Prashnani  
– Exploring spatial understanding in world models, multimodal LLMs, VLAs.

**Meta Reality Labs**, Research Scientist Intern May 2025 – Jan 2026  
Mentors: Kun He, Shoou-I Yu  
– Led the creation of SHOW3D, a massive in-the-wild hand-object interaction dataset.  
– Developed a novel ego-exo pipeline for accurate 3D hand-object pose estimation with limited views. Lead author of paper (submitted to CVPR 2026) describing our mobile capture system, automatic annotation, and applications to robotics and teleoperation.

**Squarepoint**, Quantitative Research Intern Jun 2023 – Sep 2023  
– Market structure analysis to find predictive factors using statistical and ML methods.

**Selected Publications** “SHOW3D: Capturing Scenes of 3D Hands and Objects in the Wild”  
**P. Rim**, K. Harris, B. Copple, S. Han, X. Xie, I. Shugurov, S. An, H. Wen, et al.  
IEEE/CVF Computer Vision and Pattern Recognition (**CVPR**), 2026.

“Radar-Guided Polynomial Fitting for Metric Depth Estimation”  
**P. Rim**, H. Park, V. Ezhov, J. Moon, A. Wong.  
IEEE/CVF Computer Vision and Pattern Recognition (**CVPR**), 2026.

“ProtoDepth: Unsupervised Continual Depth Completion with Prototypes”  
**P. Rim**, H. Park, S. Gangopadhyay, Z. Zeng, Y. Chung, A. Wong.  
IEEE/CVF Computer Vision and Pattern Recognition (**CVPR**), 2025.

“ETA: Energy-based Test-time Adaptation for Depth Completion”  
Y. Chung\*, H. Park\*, **P. Rim**\*, X. Zhang, J. He, Z. Zeng, S. Cicek, B. Hong, et al.  
(\*equal contribution)  
International Conference on Computer Vision (**ICCV**), 2025.

“ODE-GS: Latent ODEs for Dynamic Scene Extrapolation with 3D Gaussian Splatting”  
D. Wang, **P. Rim**, T. Tian, A. Wong, G. Sundaramoorthi.  
International Conference on Learning Representations (**ICLR**), 2026.

“Unsupervised Depth Completion via Occluded Region Completion as Supervision”  
H. Park, R. Chen, **P. Rim**, D. Lao, A. Wong.  
International Conference on Learning Representations (**ICLR**), 2026.

“Iris: Integrating Language into Diffusion-based Monocular Depth Estimation”  
Z. Zeng, J. Ni, D. Wang, **P. Rim**, Y. Chung, F. Yang, B. Hong, A. Wong.  
IEEE/CVF Computer Vision and Pattern Recognition (**CVPR**), 2026.

“Extending Foundational Monocular Depth Estimators to Fisheye Cameras with Calibration Tokens”  
S. Gangopadhyay, J. Kim, X. Chen, **P. Rim**, H. Park, A. Wong.  
International Conference on Computer Vision (**ICCV**), 2025.

“SparseFusion: Fusing Multi-Modal Sparse Representations for Multi-Sensor 3D Object Detection”  
Y. Xie, C. Xu, M. Rakotosaona, **P. Rim**, F. Tombari, K. Keutzer, M. Tomizuka, W. Zhan.  
International Conference on Computer Vision (**ICCV**), 2023.

“Quadric Representations for LiDAR Odometry, Mapping and Localization”  
C. Xia, C. Xu, **P. Rim**, M. Ding, N. Zheng, K. Keutzer, M. Tomizuka, W. Zhan.  
IEEE Robotics and Automation Letters (**RA-L**), 2023.

“Radar-Camera 3D Hand Pose Estimation from Ego and Exo Views”  
**P. Rim**, D. Hunt, T. Li, I. Diaz, X. Xie, M. Pajic, A. Wong, *Under Review at ECCV 2026*.

## Academic Experience

**Yale Vision Lab** Aug 2024 – Present  
– Adaptive efficient 3D vision; multimodal perception, reconstruction, and generation.

**Berkeley AI Research (BAIR)** Aug 2022 – Jun 2024  
Advisors: Dr. Wei Zhan, Prof. Kurt Keutzer  
– Multi-sensor 3D object detection, joint point cloud segmentation and generation.

**Caltech, Vision and Learning** May 2022 – Jun 2024  
Advisors: Prof. Yisong Yue, Prof. Jennifer J. Sun  
– Diffusion models for conditional animal trajectory generation, Interpretable AI.

Honors & Awards	Yale Computer Science “Rising Star” Award	2025
	Graduate Nathan Hale Fellowship	2024
	Henry Ford II Scholar Award	2023
	Jack E. Froehlich Memorial Award Nominee	2023
	Marcella Bonsall SURF Fellowship	2022
	George W. Housner Fund Recipient	2021, 2022
	William Hassenzahl Family SURF Fellowship	2021
	Hixon Prize for Writing Nominee	2021
	1st Place, AI Hacks Hackathon at UPenn	2020
	Top 5 Overall Hack, YHack at Yale	2020
	“Best Use of Google Cloud” Award	2020
	“Facebook: Building Community” Award	2020
	National Merit Scholarship Recipient	2020
	Teaching Experience	<b>Head Instructor (CS 12: Computer Vision for Research)</b>
– Independently designed and taught a term-long course that provides students with a practical and theoretical foundation in computer vision.		
– Covered fundamental topics and advanced topics such as transformers, diffusion models, and geometric 3D vision, drawing from my own research.		
	– Taught 23 total students, including undergraduate and graduate students. <sup>1</sup>	
	<b>Head TA (First-Year Success Research Institute)</b>	Summer 2022
	– Collaboratively designed a research project for FSRI (First-Year Success Research Institute) at Caltech, a DEI (Diversity, Equity, and Inclusion) program. Work included creating mini-projects and providing in-person help to students for 4-6 hours a week.	
	– Developed machine learning curriculum and assisted students with incorporating computer vision into their robotics projects.	
	<b>Staff Head TA (CS 2, CS 3, CS 24)</b>	2021 – 2023
	– Worked as TA for CS 2 (Data Structures), CS 3 (Software Design), and CS 24 (Computing Systems) in the fall, winter, and spring terms respectively.	
	– Promoted to Head TA of Online Platform role for all three courses in 2022, where I was in charge of managing a 24/7 online Q&A-style teaching platform, in addition to holding 4-6 hours of Office Hours per week.	
Leadership & Service	<b>CVPR, ICCV, ECCV, NeurIPS, ICLR, ICML, Reviewer</b>	2022 – Present
	<b>IEEE Transactions on Image Processing (TIP), Reviewer</b>	2025 – Present

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<sup>1</sup>Selected student endorsements:

- “I think you have made excellent video lectures and you are very good at explaining subjects clearly and concisely.”
- “The lectures have been very comprehensive and helpful. Thanks for designing a great course!”

	<b>8th UG2+ Workshop and Challenge at CVPR 2026</b> , Co-organizer	Jun 2026
	<b>New England Computer Vision (NECV)</b> , Co-organizer	Nov 2024
	<b>Quantitative Finance at Caltech</b> , Head of ML Research	2022 – 2024
	<b>Caltech Deans Office</b> , Peer Academic Coach	2022 – 2024
	<b>Caltech Course Ombuds Program</b> , Ompudsperson	2020 – 2022
	<b>Southern California Science Olympiad</b> , Treasurer	2020 – 2021
Invited Talks & Seminars	<b>Adapting 3D Reconstruction Models on the Fly, From Test-Time Adaptation to Continual Learning</b> NSF AI Institute for Edge Computing (Athena) Seminar Series	Sep 2025
	<b>2D to 3D Generation – What’s Next?</b> Yale Computer Science × Biomedical Engineering	Mar 2025 – May 2025
	<b>Adaptive, Efficient, and Robust 3D Vision</b> NYC Computer Vision Day 2025	Jan 2025
	<b>Unsupervised Continual Depth Completion with Prototypes</b> The 8th New England Computer Vision (NECV) Workshop	Nov 2024
	<b>Efficient 3D Perception</b> Berkeley Artificial Intelligence Labs	Mar 2023
	<b>CaltechFN: Distorted and Partially Occluded Digits</b> Oral Presentation at ACCV 2022	Dec 2022
	<b>Deep Sentiment Analysis of Political Campaign Videos</b> Caltech SFP Fall Seminar	Oct 2022
	<b>Identifying the Pre-Main Sequence with t-SNE</b> Poster at 240th Meeting of the American Astronomical Society	Jun 2022
	<b>Rethinking Galaxy Evolution with Unsupervised ML</b> Technical University of Denmark	Sep 2021