Rawal Khirodkar

rawalkhirodkar.github.io rawalkhirodkar@gmail.com rawalkhirodkar Google Scholar

Research Interests

Fields: Computer Vision, Machine Learning, Robotics
Topics: Digital Humans, Multimodal Reasoning, Generative AI

Education

Carnegie Mellon University — Aug 2019 - Sep 2023
Ph.D. in Robotics — Advisor: Prof. Kris Kitani

Carnegie Mellon University — Aug 2017 - July 2019
M.S. in Robotics — Advisor: Prof. Kris Kitani

Indian Institute of Technology, Bombay — Aug 2013 - July 2017
Bachelors in Computer Science — Advisor: Prof. Ramakrishnan

Professional Experience

Meta Reality Labs — July 2024 - Present
Research Scientist — Pittsburgh, PA

Meta Reality Labs — Sep 2023 - July 2024
Postdoctoral Research Scientist — Pittsburgh, PA

Meta Reality Labs — May 2022 - Aug 2022
Research Intern — Redmond, WA

Amazon Lab126 — May 2021 - Aug 2021
Research Intern — Sunnyvale, CA

Amazon Lab126 — May 2020 - Aug 2020
Research Intern — Sunnyvale, CA

Trexquant Finance — May 2017 - Aug 2017
Quantitative Analyst — Stamford, CT

Awards & Honors

- **Best Paper Candidate**, ECCV 2024, *top 10 papers* — 2024
- **Distinguished Paper Award**, CVPR 2023, Egovis Workshop, — 2023
- **Amazon Graduate Fellowship**, — 2020
- **Government of India Graduate Fellowship**, *top 25 students* — 2020–22
- **Best Teaching Assistant Honorable Mention**, IIT Bombay, — 2017
- **Indian National Physics Olympiad**, *top 50 students* — 2013
- **Indian National Maths Olympiad**, *top 50 students* — 2013
- **NTSE Scholar**, Awarded to top 800 amongst 0.5 million students, — 2009–13

Publications

[1] MHR: Momentum Human Rig
Meta Reality Labs Research. Mesh representation used by SAM3D-Body.
arxiv, 2025

[2] ATLAS: Decoupling Skeletal and Shape Parameters for Expressive Parametric Human Modeling
Jinhyung Park, Javier Romero, Shunsuke Saito, Fabian Prada, Takaaki Shiratori, Yichen Xu, Federica Bogo, Shoou-I Yu, Kris Kitani, **Rawal Khirodkar**
International Conference on Computer Vision (ICCV), 2025

[3] Capture, Canonicalize, Splat: Zero-Shot 3D Gaussian Avatars from Unstructured Phone Images
Meta Reality Labs Research.
International Conference on Computer Vision (ICCV) Workshop, 2025 (Best Paper Honorable Mention)

[4] Pippo : High-Resolution Multi-View Humans from a Single Image
Yash Kant, Ethan Weber, Jin Kyu Kim, **Rawal Khirodkar**, Su Zhaoen, Julieta Martinez, Igor Gilitschenski, Shunsuke Saito, Timur Bagautdinov
Conference on Computer Vision and Pattern Recognition (CVPR), 2024 (Highlight)

[5] Harmony4D: A Video Dataset for In-The-Wild Close Human Interactions
Rawal Khirodkar, Jyun-Ting Song, Jinkun Cao, Zhengyi Luo, Kris Kitani
Neural Information Processing Systems, NeurIPS (Datasets and Benchmark Track), 2024

[6] URAvatar: Universal Relightable Gaussian Codec Avatars
Junxuan Li, Chen Cao, Gabriel Schwartz, **Rawal Khirodkar**, Christian Richardt, Tomas Simon, Yaser Sheikh, Shunsuke Saito
Special Interest Group on Computer Graphics and Interactive Techniques, SIGGRAPH Asia, 2024

[7] Sapiens: Foundation for Human Vision Models
Rawal Khirodkar, Timur Bagautdinov, Julieta Martinez, Su Zhaoen, Austin James, Peter Selednik, Stuart Anderson, Shunsuke Saito
European Conference on Computer Vision (ECCV), 2024 (Best Paper Candidate, 5.3k Github Stars)

[8] Ego-Exo4d: Understanding Skilled Human Activity from First-and Third-Person Perspectives
Ego4D Consortium
Conference on Computer Vision and Pattern Recognition (CVPR), 2024 (Oral Presentation)

[9] Real-Time Simulated Avatar from Head-Mounted Sensors
Zhengyi Luo, Jinkun Cao, **Rawal Khirodkar**, Alexander Winkler, Kris Kitani, Weipeng Xu
Conference on Computer Vision and Pattern Recognition (CVPR), 2024 (Highlight)

[10] Dual-Modal 3D Human Pose Estimation using Insole Foot Pressure Sensors
Erwin Wu, Yichen Peng, **Rawal Khirodkar**, Hideo Koike, Kris Kitani
International Symposium on Mixed and Augmented Reality Adjunct (ISMAR), 2024

[11] SolePoser: Full body pose estimation using a single pair of insole sensor
Erwin Wu, **Rawal Khirodkar**, Hideki Koike, Kris Kitani
ACM Symposium on User Interface Software and Technology, 2024

[12] Generalizable Neural Human Renderer
Mana Masuda, Jinhyung Park, Shun Iwase, **Rawal Khirodkar**, Kris Kitani
Meeting on Image Recognition and Understanding (MIRU), 2024 (Oral Presentation)

[13] Multi-Person 3D Pose Estimation from Multi-view Uncalibrated Depth Cameras
Yu-Jhe Li, Yan Xu, **Rawal Khirodkar**, Jinhyung Park, Kris Kitani
arxiv, 2024

[14] EgoHumans: An Egocentric 3D Multi-Human Benchmark
Rawal Khirodkar, Aayush Bansal, Lingni Ma, Richard Newcombe, Minh Vo, Kris Kitani
International Conference on Computer Vision (ICCV), 2023 (Oral Presentation)

[15] Observation-Centric SORT: Rethinking SORT for Robust Multi-Object Tracking
Jinkun Cao, Xinshuo Weng, **Rawal Khirodkar**, Jiangmiao Pang, Kris Kitani
Conference on Computer Vision and Pattern Recognition (CVPR), 2023

[16] Sequential Ensembling for Semantic Segmentation
Rawal Khirodkar, Brandon Smith, Siddhartha Chandra, Amit Agrawal, Antonio C.
arxiv, 2022

[17] Occluded Human Mesh Recovery
Rawal Khirodkar, Shashank Tripathi, Kris Kitani
Conference on Computer Vision and Pattern Recognition (CVPR), 2022

[18] Multi-Instance Pose Networks: Rethinking Top-Down Pose Estimation
Rawal Khirodkar, Visesh Chari, Amit Agrawal, Ambrish Tyagi
International Conference on Computer Vision (ICCV), 2021

[19] RePOSE: Fast 6D Object Pose Refinement via Deep Texture Rendering
Shun Iwase, Xingyu Liu, **Rawal Khirodkar**, Rio Yokota, Kris Kitani
International Conference on Computer Vision (ICCV), 2021

[20] Adversarial Domain Randomization
Rawal Khirodkar, Kris Kitani
arxiv, 2019

[21] Domain Randomization for Scene Specific Object Detection & Pose Estimation
Rawal Khirodkar, Donghyun Yoo, Kris Kitani
Winter Conference on Applications of Computer Vision (WACV), 2019

Patents

[1] Human Pose Rendering
Shawn Hunt, Kris Makoto Kitani, Jinhyung Park, Shun Iwase, **Rawal Khirodkar**, Mana Masuda
US Patent App. 18/616,942, 2025

[2] Multi-Person 3D Pose Estimation
Jinhyung Park, Yu-Jhe Li, **Rawal Khirodkar**, Kris Kitani, Shawn Hunt
US Patent App. 18/504,429, 2025

Invited Talks

- 3D Human Understanding, *Hosted by Prof. Kristen Grauman, University of Texas at Austin* 2025
- Best Practices to building Foundation Models, *Facebook AI Research* 2024
- Sapiens: Foundation for Human Vision Models, *Meta Reality Labs* 2024
- Building 3D Datasets from Scratch, *Project Aria Workshop, CVPR* 2023

- Egocentric Human Understanding, *Massachusetts Institute of Technology, Graphics Seminar* 2023
- In-the-Wild Human Pose Estimation, *National University of Singapore, Vision Seminar* 2023
- Using Synthetic Data for Long-Tail Problems, *Carnegie Mellon University* 2022

Selected Media Coverage

Sapiens

LearnOpenCV, Hacker News, MarkTechPost, TeqnoVerse, Unite AI, Sentisight News

Ego-Exo4D

AI-Daily, University of Bristol, BTW-Media, Georgia-Tech

Professional Service

Organizer

- Co-organizer, 3D Human Workshop, *Second Edition, CVPR* 2025
- Co-organizer, 3D Human Workshop, *First Edition, CVPR* 2024

Conference Reviewer

NeurIPS, ICML, ICLR, CVPR, ICCV, ECCV, WACV, AAAI, SIGGRAPH Asia

Journal Reviewer

JMLR, IJCV, TPAMI

Admissions Committee

Carnegie Mellon University: Masters in Computer Vision (*twice*), Masters in Robotics, Ph.D. in Robotics

Research Mentoring

- David Park (CMU RI PhD), 2023–2024
- Jyun-Ting Song (CMU MSR, now PhD at CMU RI), 2023–2024
- Jinkun Cao (CMU RI PhD, now at Meta), 2022–2023
- Shun Iwase (CMU MSR, now PhD at CMU RI), 2020–2021
- Shengcao Cao (CMU MSR, now PhD at UIUC), 2019–2020
- Rishi Madhok (CMU MSCV, now at Microsoft), 2018–2019

Teaching

Teaching Assistance

- Computer Vision (16-720), CMU, *Instructor: Srinivasa & Kris* Fall 2021 & 2020, Spring 2018
- Statistical Techniques in Robotics (16-831), CMU, *Instructor: Kris Kitani* Spring 2019
- Math Fundamentals (16-811), CMU, *Instructor: Michael Erdmann* Fall 2019
- Machine Learning (10-601), CMU, *Instructor: Matt Gormley* Fall 2018

- Intro. to Computer Science (CS-101), IITB, *Instructor: Sharat Chandran* Spring 2017

Guest Lectures

- Computer Vision (16-720), CMU, *Backpropagation and Optimizers* Fall 2022