

RAWAL KHIRODKAR

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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

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|---------------------------------|----------------------|
| 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 Gilitschen-ski, 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
International Conference on Computer Vision (ICCV), 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, Sentsight 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