

Unnat Jain

CONTACT	Email: unnatjain@gmail.com	Homepage: https://unnat.github.io/
KEYWORDS	Embodied intelligence, visual representations for robotics, multi-agent RL, AI & science	
EDUCATION	University of Illinois at Urbana-Champaign Ph.D., Computer Science, 2018 - 2022 [Outstanding PhD Student award] 4.0/4.0 M.S., Computer Science, 2016 - 2018 [Best Thesis award, Siebel Scholar] 4.0/4.0 Advisors: Alexander Schwing and Svetlana Lazebnik	
	Indian Institute of Technology (IIT), Kanpur, India B.T. - M.T. (Dual), Electrical Engineering, 2011-16 [Director's Gold Medal] 9.7/10.0	
EMPLOYMENT	<ul style="list-style-type: none">• Fundamental AI Research (FAIR) at Meta, Pittsburgh, PA – Researcher <i>[Mar'22-]</i> Carnegie Mellon University, Pittsburgh, PA – Visitor Mentors: Abhinav Gupta, Deepak Pathak, Xinlei Chen• Google DeepMind, New York City, NY – Research Intern <i>[May-Dec'21]</i> Mentor: Rob Fergus• Allen Institute for AI, Seattle, WA – Research Intern <i>[May-Aug'18, May-Aug'20]</i> Mentors: Ali Farhadi, Ani Kembhavi, Luca Weihs• Facebook AI Research, Menlo Park, CA - Research Intern <i>[May'19-May'20]</i> Mentor: Kristen Grauman• Uber ATG, Pittsburgh, PA - Autonomous Driving Intern <i>[May-Aug'17]</i>• University of Massachusetts, Amherst, MA - Research Intern <i>[May-Aug'15]</i> Mentors: Erik Learned-Miller, Subhanshu Maji	
SELECT AWARDS	<ul style="list-style-type: none">• Best Paper at 6th Robot Learning workshop at NeurIPS 2023 <i>['23]</i>• Mavis Future Faculty Fellowship by College of Engg. UIUC <i>['21]</i>• C.W. Gear Outstanding PhD Student Award at CS@Illinois <i>['21]</i>• Outstanding Intern of 2020 at Allen Institute for AI (\$10k prize) <i>['20]</i>• Institute nomination for Google and Microsoft Research Fellowships <i>['20]</i>• Qualcomm Innovation Fellowship Finalist <i>['19]</i>• Selection for Amazon Graduate Research Symposium for Collaborative Embodied Agents <i>['19]</i>• Best Talk Award: 'AI in action' session of CSL Student Conference <i>['19]</i>• Best MS thesis at CS@Illinois (David J. Kuck Outstanding MS Thesis Award) <i>['19]</i>• Siebel Scholars: Among 90 graduate students from select 16 schools worldwide (\$35k prize) <i>['18]</i>• Director's Gold Medal, IIT Kanpur: Best all round achievement and leadership <i>['16]</i>• Cadence's Gold Medal, IIT Kanpur: Best master's thesis in all engineering departments <i>['16]</i>• Member of Indian student contingent to Japanese government's JENESYS 2.0 program. <i>['14]</i>• Summer Undergraduate Research Grant for Excellence, IIT Kanpur <i>['13]</i>• India Scholarship Award, IET: 2nd prize in over 5000 nationwide applicants <i>['13]</i>• OPJEMS National Scholarship: Awarded to 70 undergraduates from select Indian institutes <i>['12]</i>• Scholarship for Higher Education by Ministry of HR and Development (declined) <i>['11]</i>	
SELECT MEDIA COVERAGE	<ul style="list-style-type: none">• TECHCRUNCH <i>Embodied AI Spins a Pen and Helps Clean the Living Room</i> <i>['23]</i>• siliconANGLE <i>Habitat 3.0 Simulates Real-World Environments for Intelligent AI Robot Training</i> <i>['23]</i>• The INDEPENDENT <i>Robots Can Now Learn New Skills by Watching Videos</i> <i>['23]</i>• TECHCRUNCH <i>Robots Learn to Perform Chores by Watching YouTube</i> <i>['23]</i>• CarnegieMellon University <i>CMU Researchers Expand Ability of Robots to Learn From Videos</i> <i>['23]</i>• VentureBeat <i>Allen Institute Open-Sources AllenAct</i> <i>['20]</i>• hacksteric <i>AllenAct Will Help You Get Your Embodied AI Act Together</i> <i>['20]</i>• facebook Artificial Intelligence <i>New Milestones in Embodied AI</i> <i>['20]</i>• The Daily Free Press <i>BU Showcases SoundSpaces: Adding Audio-Visual Navigation to AI</i> <i>['20]</i>• MIT Technology Review <i>Facebook Is Training Robot Assistants to Hear as Well as See</i> <i>['20]</i>• siliconANGLE <i>Facebook Open-Sources Embodied AI Tools to Advance Robotic Navigation</i> <i>['20]</i>• VentureBeat <i>Facebook Releases Tools to Help AI Navigate Complex Environments</i> <i>['20]</i>• ZDNet <i>Home Robots to Help You Find Your Ringing Phone</i> <i>['20]</i>	

1. Retrospectives on the Embodied AI Workshop (2022) [\[arxiv\]](#)
M. Deitke *et al.*
2. AllenAct: A Framework for Embodied AI Research (2020) [\[platform\]](#)[\[arxiv\]](#)
L. Weihs*, J. Salvador*, K. Kotar*, **U. Jain**, K. Zeng, R. Mottaghi, A. Kembhavi
3. Exploitation-Guided Exploration for Semantic Embodied Navigation (2023) [\[project\]](#)[\[arxiv\]](#)
J. Wasserman, G. Chowdhary, A. Gupta, **U. Jain**
6th Robot Learning workshop, NeurIPS 2023 (Best Paper)
International Conference on Robotics and Automation (ICRA), 2024
4. Habitat 3.0: A Co-Habitat for Humans, Avatars and Robots [\[platform\]](#)[\[arxiv\]](#)
X. Puig *et al.*
International Conference on Learning Representations (ICLR), 2024
5. MOPA: Modular Object Navigation with PointGoal Agents [\[project\]](#)[\[arxiv\]](#)
S. Raychaudhuri, T. Campari, **U. Jain**, M. Savva, A. X. Chang
Winter Conference on Applications of Computer Vision (WACV), 2024
6. An Unbiased Look at Datasets for Visuo-Motor Pre-Training [\[project\]](#)[\[pdf\]](#)
S. Dasari, M. K. Srirama, **U. Jain***, A. Gupta*
Conference on Robot Learning (CoRL), 2023
7. Pretrained Language Models as Visual Planners for Human Assistance [\[project\]](#)[\[arxiv\]](#)
D. Patel, H. Eghbalzadeh, N. Kamra, M. L. Iuzzolino, **U. Jain***, R. Desai*
International Conference on Computer Vision (ICCV), 2023
8. Adaptive Coordination in Social Embodied Rearrangement [\[project\]](#)[\[arxiv\]](#)
A. Szot, **U. Jain**, Z. Kira, D. Batra, R. Desai, A. Rai
International Conference on Machine Learning (ICML), 2023
9. Affordances from Human Videos as a Versatile Representation for Robotics [\[project\]](#)[\[arxiv\]](#)
S. Bahl, R. Mendonca, L. Chen, **U. Jain**, D. Pathak
Computer Vision and Pattern Recognition (CVPR), 2023
10. Last-Mile Embodied Visual Navigation [\[project\]](#)[\[arxiv\]](#)
J. Wasserman*, K. Yadav, G. Chowdhary, A. Gupta, **U. Jain***
Conference on Robot Learning (CoRL), 2022
11. Learning State-Aware Visual Representations from Audible Interactions [\[project\]](#)[\[arxiv\]](#)
H. Mittal, P. Morgado, **U. Jain**, A. Gupta
Neural Information Processing Systems (NeurIPS), 2022
12. Bridging the Imitation Gap by Adaptive Insubordination [\[project\]](#)[\[arxiv\]](#)
L. Weihs*, **U. Jain***, J. Salvador, S. Lazebnik, A. Kembhavi, A. Schwing
Neural Information Processing Systems (NeurIPS), 2021
13. Language-Aligned Waypoint (LAW) Supervision for VLN in Continuous Environments [\[project\]](#)[\[arxiv\]](#)
S. Raychaudhuri, S. Wani, S. Patel, **U. Jain**, A. X. Chang
Empirical Methods in Natural Language Processing (EMNLP), 2021
14. GridToPix: Training Embodied Agents with Minimal Supervision [\[project\]](#)[\[arxiv\]](#)
U. Jain, I. Liu, S. Lazebnik, A. Kembhavi, L. Weihs*, A. Schwing*
International Conference on Computer Vision (ICCV), 2021
15. Interpretation of Emergent Communication in Heterogeneous Collaborative Embodied Agents [\[project\]](#)[\[pdf\]](#)
S. Patel*, S. Wani*, **U. Jain***, A. Schwing, S. Lazebnik, M. Savva, A. X. Chang
International Conference on Computer Vision (ICCV), 2021
16. Cooperative Exploration for Multi-Agent Deep Reinforcement Learning [\[project\]](#)[\[arxiv\]](#)
I. Liu, **U. Jain**, R. Yeh, A. Schwing
International Conference on Machine Learning (ICML), 2021 (Long oral)
17. Multi-ON: Benchmarking Semantic Map Memory using Multi-Object Navigation [\[project\]](#)[\[arxiv\]](#)
S. Wani*, S. Patel*, **U. Jain***, A. X. Chang, M. Savva
Neural Information Processing Systems (NeurIPS), 2020
18. A Cordial Sync: Going Beyond Marginal Policies for Multi-Agent Embodied Tasks [\[project\]](#)[\[arxiv\]](#)
U. Jain*, L. Weihs*, E. Kolve, A. Farhadi, S. Lazebnik, A. Kembhavi, A. Schwing
European Conference on Computer Vision (ECCV), 2020 (Spotlight talk)

19. SoundSpaces: Audio-Visual Navigation in 3D Environments
C. Chen*, **U. Jain***, C. Schissler, S. Gari, Z. Al-Halah, V. Ithapu, P. Robinson, K. Grauman
European Conference on Computer Vision (ECCV), 2020 (Spotlight talk) [project][arxiv]
20. TABVCR: Tags and Attributes for Visual Commonsense Reasoning
J. Lin, **U. Jain**, A.G. Schwing
Neural Information Processing Systems (NeurIPS), 2019 [project][arxiv]
21. Two Body Problem: Collaborative Visual Task Completion
U. Jain*, L. Weihs*, E. Kolve, M. Rastegari, S. Lazebnik, A. Farhadi, A. Schwing, A. Kembhavi
Computer Vision and Pattern Recognition (CVPR), 2019 (Oral talk) [project][arxiv]
22. Two can play this Game: Visual Dialog with Discriminative Question Generation and Answering
U. Jain, S. Lazebnik and A.G. Schwing
Computer Vision and Pattern Recognition (CVPR), 2018 [arxiv]
23. Creativity: Generating Diverse Questions using Variational Autoencoders
U. Jain*, Z. Zhang* and A.G. Schwing
Computer Vision and Pattern Recognition (CVPR), 2017 (Spotlight talk) [arxiv]
24. Compact Environment-Invariant Codes for Robust Visual Place Recognition
U. Jain, V. Namboodiri and G. Pandey
Conference on Computer and Robot Vision (CRV), 2017 [arxiv]

INVITED TALKS

- **Open Catalyst Project and AI Chemistry team, Fundamental AI Research at Meta**
Redesigning Embodied Intelligence ... and Lessons for Pretraining DFT Surrogates ['23]
- **Machine Learning and Computer Vision Seminar, University of Bristol**
The Nuanced Pathway from Egocentric Videos to Robotics ['23]
- **Embodied AI Seminar, Fundamental AI Research at Meta**
An Unbiased Look at Datasets for Visuo-Motor Pre-Training (slides) ['23]
- **Visual Geometry Group Seminar, University of Oxford**
Collaborative Embodied Agents (slides) (video) ['21]
- **Machine Commonsense Grant Meeting, DARPA**
Collaborative Embodied Agents (slides) ['21]
- **Visual-Computing-Robotics Seminar Series, Simon Fraser University**
AI Agents that can Collaborate and Communicate in Virtual Visual Worlds ['21]
- **Utah Center for Data Science, University of Utah**
Collaborative Embodied Agents (video) ['20]
- **Graduate Research Symposium, Amazon HQ**
Two Body Problem (video) ['19]
- **Guest lecture in Visual Recognition Course, IIT Kanpur**
Two Body Problem (slides) ['19]
- **DelTA Group Seminar, IIT Kanpur**
Creativity: Generating Diverse Questions using VAEs ['17]

MENTORING

- **Jingxiang (Dean) Lin** (BS at UIUC → MS at CMU → Google)
See publication #20 (NeurIPS '19) on visual commonsense, CRA Honourable Mention 2020
- **Shivansh Patel** (BS at IIT Kanpur → now PhD at UIUC)
See publication #15 (ICCV '21) and #17 (NeurIPS '20), Qualcomm Fellowship finalists
- **Saim Wani** (BS at IIT Kanpur → Graviton Capital)
See publication #15 (ICCV '21) and #17 (NeurIPS '20), Qualcomm Fellowship finalists
- **Sonia Raychaudhuri** (MS at SFU → now PhD at SFU)
See publication #5 (WACV '24) and #13 (EMNLP '21) on instruction-following visual agents.
- **Himangi Mittal** (MS at CMU → now PhD at CMU)
See publication #11 (NeurIPS '22) on learning representation around interaction.
- **Justin Wasserman** (PhD at UIUC)
See publication #2 (arXiv) and #10 (CoRL '22) on sim & real navigation.

TEACHING

- Graduate Teaching Assistant:** 4 semesters at UIUC, 2 semesters at IIT Kanpur (*Aug'15 - May'18*)
- IIT Kanpur: Probability and Statistics (MTH203) & Digital Communication Lab (EE673)
 - UIUC: Computer Vision (CS543), Intro. to Computing (CS101) & Numerical Methods (CS357)
[Excellent TA Award×2]

Senior Academic Mentor, Counselling Service, IIT Kanpur: 4 semesters (Aug'12 - May'14)
• Conducted remedial classes for CS and EE courses for peers needing academic help

ACADEMIC
SERVICE

Area Chair

- Computer Vision and Pattern Recognition (CVPR): 2024
- Computer Vision and Pattern Recognition (CVPR): 2023 [list]
- Neural Information Processing Systems (NeurIPS), 2023 [list]

Workshops — Lead Co-Organizer

- CV 20/20: A Retrospective Vision, CVPR 2024 [Retro-CV]
- Scholars & Big Models: How Can Academics Adapt?, CVPR 2023 [Academic-CV]
- Learning to Adapt and Improve in the Real World, CoRL 2022 [RoboAdapt]

Reviewer

- Conferences: NeurIPS 2020, 2021; CVPR 2021, 2022; ICCV 2021
- Journals: IEEE Robotics and Automation Letters (RAL) 2021, International Journal of Computer Vision (IJCV) 2021, Computer Vision and Image Understanding (CVIU) 2018, 2019
- **Outstanding reviewer awards:** NeurIPS 2020 (top 10%), CVPR 2021, NeurIPS 2021 (top 8%)

Workshops — Program Committee

- Closing The Loop Between Vision And Language, ICCV 2023 [webpage]
- Embodied AI Workshop, CVPR 2021, 2022, 2023 [webpage]
- Embodied Multimodal Learning, ICLR 2021 [webpage]

Mentor, CVPR Student Mentoring Program (2023)

- Organized by CVPR Chairs, faculty and industry leaders engaged in informal mentoring with selected 300 students at CVPR 2023 Vancouver

Mentor, Women in Machine Learning (WiML) (2022-)

- Mentoring PhD aspirants on preparing a stronger grad school application

Mentor, Illinois Scholars Undergraduate Research (ISUR) (2021)

- Mentored a Computer Science undergraduate student to independently lead a research project focussed on robust policies of embodied AI agents

Mentor, Introduction to Academic Writing, Dept. of Linguistics (2021)

- Mentored the technical writing and comprehension of a ECE Master's student in course English as a Second Language (ESL) 515

SOCIAL
INITIATIVES

Head of Social Initiatives, Techkriti (IIT Kanpur's technical festival) (Aug'13 - Aug'14)

Led a team of volunteers to organize the following events of social impact:

- Flood relief drive for state of Uttarakhand, collaborating with [Goonj NGO](#)
- Nationwide competition to promote blogging for social awareness - 'Blog for a Cause'
- 'Fulfill-a-wish' drive for Subhash Care Home Orphanage, Kanpur on Christmas Day.

Core team member, Svagatagami NGO (Jul'13 - Jan'14)

- Worked closely with children with disabilities at Sankalp Day Care Center, Kanpur
- With Dept. of Design, manufactured an oral motor therapy solution for involuntary drooling
- Awarded **Social Impact Prize** for our solution at Entrepreneurship Summit, IIT Kanpur

Peer Educator, Child In Need Insitute (CINI) and Save the Children (Jul'08 - Jan'10)

- Volunteered for the project 'Creating educational opportunities for street children in Kolkata'
- After school, tutored children from economically distressed and underrepresented communities
- The project got 500 school dropouts back to vernacular schools [Times article with details]

REFERENCES

Alexander Schwing , Associate Professor, UIUC	aschwing@illinois.edu
Svetlana Lazebnik , Professor, UIUC	slazebni@illinois.edu
Abhinav Gupta , Professor, Carnegie Mellon University	abhinavg@cs.cmu.edu
Kristen Grauman , Professor, UT Austin	grauman@cs.utexas.edu
Deepak Pathak , Assistant Professor, Carnegie Mellon University	dpathak@cs.cmu.edu
Aniruddha Kembhavi , Senior Director, Allen Institute for AI	anik@allenai.org
Angel X. Chang , Assistant Professor, Simon Fraser University, Canada	angelx@sfu.ca