

Shikhar Bahl

CONTACT

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RESEARCH INTERESTS

Robot Learning, Robotics, Manipulation, Perception and Control, Computer Vision, Reinforcement Learning, Deep Learning

EDUCATION

Carnegie Mellon University

Aug 2019 – March 2024

PhD Candidate in Robotics Institute, School of Computer Science

GPA: 4.0/4.0

Advisors: [Deepak Pathak](#) & [Abhinav Gupta](#)

University of California, Berkeley

Aug 2015 – May 2019

BA Applied Mathematics

GPA: 3.96/4.0

BA Computer Science

Honors: summa cum laude

RESEARCH EXPERIENCE

Carnegie Mellon University, Pittsburgh, PA

Aug 2019 - Mar 2024

Graduate Student, advised by [Deepak Pathak](#) and [Abhinav Gupta](#)

FAIR (Meta AI), Pittsburgh, PA

May 2022 - May 2023

Visiting Researcher, hosted by [Aravind Rajeswaran](#)

Nvidia AI, Seattle, WA

May 2021 - Oct 2021

Research Intern, hosted by [Stan Birchfield](#) and [Jon Tremblay](#)

UC Berkeley, Robotic and AI Learning Lab, Berkeley, CA

M 2021 - Oct 2021

Undergraduate Researcher, advised by [Sergey Levine](#) and [Ashvin Nair](#)

USCF, San Francisco, WA

April 2017 - Dec 2017

Research Intern, hosted by [Rada Savic](#)

PUBLICATIONS ([G-SCHOLAR](#))

- [1] Open X-embodiment: Robotic learning datasets and rt-x models.
Open X-Embodiment Team.
ICRA, 2024.
- [2] Playfusion: Skill acquisition via diffusion from language-annotated play.
Lili Chen*, **Shikhar Bahl***, Deepak Pathak.
CoRL 2023.
- [3] Deft: Dexterous fine-tuning for real-world hand policies.
Aditya Kannan*, Kenny Shaw*, **Shikhar Bahl**, Pragna Mannam, Deepak Pathak.
CoRL 2023.
- [4] Efficient RL via Disentangled Environment and Agent Representations.
Kevin Gmelin*, **Shikhar Bahl***, Russell Mendonca, Deepak Pathak.
ICML, 2023. Oral
- [5] Structured World Models from Human Videos.
Russell Mendonca*, **Shikhar Bahl***, Deepak Pathak.
RSS, 2023.
- [6] Affordances from Human Videos as a Versatile Representation for Robotics.
Shikhar Bahl*, Russell Mendonca*, Lili Chen, Unnat Jain, Deepak Pathak.
CVPR, 2023.

- [7] Autonomously Exploring Robotic Agents in the Real World.
Russell Mendonca, **Shikhar Bahl**, Deepak Pathak.
ICRA, 2023.
- [8] VideoDex: Learning Dexterity from Internet Videos.
Kenny Shaw*, **Shikhar Bahl***, Deepak Pathak.
CoRL 2022.
- [9] Human-to-Robot Imitation in the Wild.
Shikhar Bahl, Abhinav Gupta*, Deepak Pathak*.
RSS 2022.
- [10] RB2: Robotics Benchmarking with a Twist.
Sudeep Dasari, Jianren Wang, Joyce Hong, **Shikhar Bahl**, Yixin Lin, Austin Wang, Abitha Thankaraj, Karanbir Chahal, Berk Calli, Saurabh Gupta, David Held, Lerrel Pinto, Deepak Pathak, Vikash Kumar, Abhinav Gupta.
NeurIPS 2021 Dataset Track
- [11] Hierarchical Neural Dynamic Policies.
Shikhar Bahl, Abhinav Gupta, Deepak Pathak.
RSS 2021 (Invited to Autonomous Robots Special Issue)
- [12] Neural Dynamic Policies for End-to-End Sensorimotor Learning.
Shikhar Bahl, Mustafa Mukadam, Abhinav Gupta, Deepak Pathak.
NeurIPS 2020. Spotlight.
- [13] State-Covering Self-Supervised Reinforcement Learning.
Vitchyr Pong*, Murtaza Dalal*, Steven Lin*, Ashvin Nair, **Shikhar Bahl**, Sergey Levine.
ICML 2020
- [14] Solving Industrial Automation Tasks with Natural Rewards Using Residual Reinforcement Learning.
Gerrit Schoettler*, Ashvin Nair*, Jianlan Luo, **Shikhar Bahl**, Juan Aparicio Ojea, Eugen Solowjow, Sergey Levine.
IROS 2020
- [15] Contextual Imagined Goals for Self-Supervised Robotic Learning.
Ashvin Nair*, **Shikhar Bahl***, Alexander Khazatsky*, Vitchyr Pong, Glen Berseth, Sergey Levine.
CoRL 2019
- [16] Residual Reinforcement Learning for Robot Control.
Tobias Johannink*, **Shikhar Bahl***, Ashvin Nair*, Jianlan Luo, Eugen Solowjow, Sergey Levine.
ICRA 2019
- [17] Visual Reinforcement Learning with Imagined Goals.
Ashvin Nair*, Vitchyr Pong*, Murtaza Dalal, **Shikhar Bahl**, Steven Lin, Sergey Levine.
NeurIPS 2018. Spotlight

JOURNAL PAPERS (G-SCHOLAR)

- [1] Learning Dexterity from Human Hand Motion in Internet Videos.
Kenny Shaw*, **Shikhar Bahl***, Aravind Sivakumar, Deepak Pathak. *IJRR, 2024.*
- [2] Dynamical Systems for Efficient Robot Learning.
Shikhar Bahl, Abhinav Gupta, Deepak Pathak. *In submission.*
- [3] Impact on inequities in health indicators: Effect of implementing the integrated management of neonatal and childhood illness programme in Haryana, India.
S Taneja, **S Bahl**, S Mazumder, J Martinez, N Bhandari, MK Bhan, *Journal of Global Health*, 2015.

INVITED TALKS

Watch, Practice, Improve: Towards In-the-wild Manipulation
EECS 598: Action and Perception, University of Michigan
Freshman Seminar Series on Robotics, UC Irvine
Stanford Vision and Learning Lab, Stanford University
Lerrel Pinto Lab, New York University

Jan 2024
Dec 2023
Oct 2023
Feb 2023

	Hierarchical Neural Dynamical Policies	
	Cognitive Assistive Robotics Lab, University of New Hampshire	May 2022
	Columbia Artificial Intelligence Lab, Columbia University	Dec 2021
	Intelligent Autonomous Systems Group, TU Darmstadt	Sept 2021
	Robots Percieving and Doing (R-PAD) Lab, CMU	Jan 2021
	RoboTouch Lab, CMU	Dec 2020
MEDIA COVERAGE	Affordances from Videos as a Versatile Representation for Robotics	Spring 2023
	<i>Live CBS TV, TechCrunch, Independent, CMU News, TechXplore</i>	
	Human-to-Robot Imitation in the Wild	Summer 2022
	<i>Vox, TechCrunch, Live CBS TV, Voice of America, ASME, TechXplore, La Presse, 01Net French</i>	
AWARDS AND HONORS	Uber Presidential Fellowship	2022
	Nvidia Graduate Research Fellowship Finalist	2022
	Highest Distinction in General Scholarship (summa cum laude)	2019
	Phi Beta Kappa	2019
	Dean's Honors List , UC Berkeley	2015-2019
	Upsilon Pi Epsilon CS Honor Society , UC Berkeley	2017
SERVICE AND LEADERSHIP	Mentorship: Kenny Shaw (CMU, MS → CMU, PhD), Lili Chen (CMU, PhD), Hayou Xiong (CMU, MS), Kevin Gmelin (CMU, MS → Tesla), Aditya Kannan (CMU, MS → Hudson River Trading), Alexandre Kirchmayer (CMU, MS → Princeton, PhD), Kehlani Fay (RISS).	
	Reviewing: NeurIPS, RSS, CVPR, ICCV, ECCV, CoRL, ICML, ICLR, RA-L, ICRA, IROS	
	Workshops: Learning to Adapt and Improve in the Real World, Corl 2022 (<i>Lead Organizer</i>)	
	Outreach: Mentor for CMU AI Mentoring Program, RISS program	
TEACHING	Head Teaching Assistant: Learning Embodied Agents and Perception, CMU	Fall 2021
	Teaching Assistant: Statistical Techniques in Robotics, CMU	Fall 2020
	Teaching Assistant: Optimization Models, UC Berkeley	Fall 2018
	Reader: Algorithms, UC Berkeley	Spring 2018
	Reader: Discrete Math and Probability, UC Berkeley	Fall 2017
COURSES	Adaptive Control and RL*, Computer Vision*, Convex Optimization*, Advanced Machine Learning*, Kinematics, Dynamics and Control*, Deep Reinforcement Learning*, Machine Learning, Probability and Stochastic Processes, Optimization Models, Operating Systems, Advanced Data Science, Numerical Analysis, Real Analysis, Complex Analysis, Advanced Linear Algebra	
	* indicates graduate courses	