Ryan Hoque

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EDUCATION

UC Berkeley — Ph.D., Computer Science AUGUST 2020 - MAY 2024
- Advisor: Ken Goldberg
- Dissertation Committee: Ken Goldberg, Pieter Abbeel, Anca Dragan, Shuran Song
- Robotics + AI Concentration in the Berkeley Artificial Intelligence Research (BAIR) Lab

UC Berkeley — M.S., Electrical Engineering and Computer Sciences AUGUST 2019 - MAY 2020
- GPA: 4.00/4.00 (*summa cum laude*)
- Advisor: Ken Goldberg
- Robotics + AI Concentration; Thesis: Robotic Fabric Manipulation with Deep Imitation Learning and Reinforcement Learning in Simulation

UC Berkeley — B.S., Electrical Engineering and Computer Sciences AUGUST 2016 - MAY 2019
- GPA: 4.00/4.00 (*summa cum laude*)

INDUSTRY EXPERIENCE

NVIDIA SRL, Seattle, WA — Research Scientist Intern MAY 2023 - SEPTEMBER 2023
- Seattle Robotics Lab — collaborated with Ajay Mandlekar, Caelan Garrett, and Dieter Fox on new methods for imitation learning in robotics
- Developed a novel data generation system that increases imitation learning policy robustness by up to 39x with only 10 human interventions

Uber ATG, San Francisco, CA — Autonomous Vehicle Software Intern MAY 2019 - AUGUST 2019
- Simulation Team — worked on reducing simulation runs by predicting which ones were most likely to fail
- Built an ML pipeline to automate training and prediction on AWS, using a random forest approach to improve accuracy from 57% to 92% and saving 65% in costs (new default in production)

Uber, Palo Alto, CA — Software Engineering Intern MAY 2018 - AUGUST 2018
- Maps Team — deployed backend software for tracking, consolidating, and ranking 30,000+ place editing tasks/week for places involved in 1.5 million trips daily

PREPRINTS AND PUBLICATIONS (Reverse Chronological)

1. Open X-Embodiment Collaboration, A. Padalkar, A. Pooley, A. Jain, A. Bewley, A. Herzog, A. Irpan, A. Khazatsky, A. Rai, A. Singh, A. Brohan, A. Raffin, A. Wahid, B. Burgess-Limerick, B. Kim, B. Schölkopf, B. Ichter, C. Lu, C. Xu, C. Finn, C. Xu, C. Chi, C. Huang, C. Chan, C. Pan, C. Fu, C. Devin, D. Driess, D. Pathak, D. Shah, D. Büchler, D. Kalashnikov, D. Sadigh, E. Johns, F. Ceola, F. Xia, F. Stulp, G. Zhou, G.S. Sukhatme, G. Salhotra, G. Yan, G. Schiavi, G. Kahn, H. Su, H. Fang, H. Shi, H. Amor, H. Christensen, H. Furuta, H. Walke, H. Fang, I. Mordatch, I. Radosavovic, I. Leal, J. Liang, J. Abou-Chakra, J. Kim, J. Peters, J. Schneider, J. Hsu, J. Bohg, J. Bingham, J. Wu, J. Wu, J. Luo, J. Gu, J. Tan, J. Oh, J. Malik, J. Tompson, J. Yang, J.J. Lim, J. Silvério, J. Han, K. Rao, K. Pertsch, K. Hausman, K. Go, K. Gopalakrishnan, K. Goldberg, K. Byrne, K. Oslund, K. Kawaharazuka, K. Zhang, K. Rana, K. Srinivasan, L.Y. Chen, L. Pinto, L. Tan, L. Ott, L. Lee, M. Tomizuka, M. Du, M. Ahn, M. Zhang, M. Ding, M.K. Srirama, M. Sharma, M. Kim, N. Kanazawa , N. Hansen, N. Heess, N.J. Joshi, N. Suenderhauf, N. Di Palo, N. Shafiullah, O. Mees, O. Kroemer, P.R. Sanketi, P. Wohlhart, P. Xu, P. Sermanet, P. Sundaresan, Q. Vuong, R. Rafailov, R. Tian, R. Doshi, R. Martín-Martín, R. Mendonca, R. Shah, **R. Hoque**, R. Julian, S. Bustamante, S. Kirmani, S. Levine, S. Moore, S. Bahl, S. Dass, S. Sonawani, S. Song, S. Xu, S. Haldar, S. Adebola, S. Guist, S. Nasiriany, S. Schaal, S. Welker, S. Tian, S. Dasari, S. Belkhale, T. Osa, T. Harada, T. Matsushima, T. Xiao, T. Yu, T. Ding, T. Davchev, T.Z. Zhao, T. Armstrong, T. Darrell, V. Jain, V. Vanhoucke, W. Zhan, W. Zhou, W. Burgard, X. Chen, X. Wang, X. Zhu, X. Li, Y. Lu, Y. Chebotar, Y. Zhou, Y. Zhu, Y. Xu, Y. Wang, Y. Bisk, Y. Cho, Y. Lee, Y. Cui, Y.

Wu, Y. Tang, Y. Zhu, Y. Li, Y. Iwasawa, Y. Matsuo, Z. Xu, Z.J. Cui. Open X-Embodiment: Robotic Learning Datasets and RT-X Models. To appear at *IEEE International Conference on Robotics and Automation*, 2024.

2. G. Datta*, **R. Hoque***, A. Gu, E. Solowjow, K. Goldberg. IIFL: Implicit Interactive Fleet Learning from Heterogeneous Human Supervisors. *Conference on Robot Learning (CoRL)*, 2023.
3. S. Sharma, K. Shivakumar, H. Huang, L. Chen, **R. Hoque**, B. Ichter, K. Goldberg. Semantic Mechanical Search with Large Vision and Language Models. *Conference on Robot Learning (CoRL)*, 2023.
4. **R. Hoque**, A. Mandlekar, C. Garrett, K. Goldberg, D. Fox. Interventional Data Generation for Robust and Data-Efficient Robot Imitation Learning. *Conference on Robot Learning (CoRL)* First Workshop on Out-of-Distribution Generalization in Robotics, 2023.
5. K. Chen, **R. Hoque**, K. Dharmarajan, E. LLontop, S. Adebola, J. Ichnowski, J. Kubiatowicz, K. Goldberg. FogROS2-SGC: A ROS2 Cloud Robotics Platform for Secure Global Connectivity. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2023.
6. J. Kerr, H. Huang, A. Wilcox, **R. Hoque**, J. Ichnowski, R. Calandra, K. Goldberg. Learning Self-Supervised Representations from Vision and Touch for Active Sliding Perception of Deformable Surfaces. *Robotics: Science and Systems (RSS)*, 2023.
7. **R. Hoque**, L.Y. Chen, S. Sharma, K. Dharmarajan, B. Thananjeyan, P. Abbeel, K. Goldberg. Fleet-DAgger: Interactive Robot Fleet Learning with Scalable Human Supervision. *Conference on Robot Learning (CoRL)*, 2022. **Oral Presentation** (6.5% of papers).
8. **R. Hoque***, K. Shivakumar*, S. Aeron, G. Deza, A. Ganapathi, A. Wong, J. Lee, A. Zeng, V. Vanhoucke, K. Goldberg. Learning to Fold Real Garments with One Arm: A Case Study in Cloud-Based Robotics Research. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2022.
9. S. Sharma*, E. Novoseller*, V. Viswanath, Z. Javed, R. Parikh, **R. Hoque**, A. Balakrishna, D.S. Brown, K. Goldberg. Learning Switching Criteria for Sim2Real Transfer of Robotic Fabric Manipulation Policies. *IEEE Conference on Automation Science and Engineering (CASE)*, 2022.
10. **R. Hoque***, D. Seita*, A. Balakrishna, A. Ganapathi, A. Tanwani, N. Jamali, K. Yamane, S. Iba, K. Goldberg. VisuoSpatial Foresight for Physical Sequential Fabric Manipulation. *Autonomous Robots* 46, 175–199 (2022).
11. **R. Hoque**, A. Balakrishna, E. Novoseller, A. Wilcox, D. Brown, K. Goldberg. ThriftyDAgger: Budget-Aware Novelty and Risk Gating for Interactive Imitation Learning. *Conference on Robot Learning (CoRL)*, 2021. **Oral Presentation** (6.5% of papers).
12. **R. Hoque**, A. Balakrishna, C. Putterman, M. Luo, D. Brown, D. Seita, B. Thananjeyan, E. Novoseller, K. Goldberg. LazyDAgger: Reducing Context Switching in Interactive Imitation Learning. *IEEE Conference on Automation Science and Engineering (CASE)*, 2021.
13. A. Ganapathi, P. Sundaresan, B. Thananjeyan, A. Balakrishna, D. Seita, J. Grannen, M. Hwang, **R. Hoque**, J. Gonzalez, N. Jamali, K. Yamane, S. Iba, K. Goldberg. Learning dense visual correspondences in simulation to smooth and fold real fabrics. *IEEE International Conference on Robotics and Automation (ICRA)*, 2021.
14. **R. Hoque***, D. Seita*, A. Balakrishna, A. Ganapathi, A. Tanwani, N. Jamali, K. Yamane, S. Iba, K. Goldberg. VisuoSpatial Foresight for Multi-Step, Multi-Task Fabric Manipulation. *Robotics: Science and Systems (RSS)*, 2020.
15. D. Seita, A. Ganapathi, **R. Hoque**, M. Hwang, E. Cen, A. Tanwani, A. Balakrishna, B. Thananjeyan, J. Ichnowski, N. Jamali, K. Yamane, S. Iba, J. Canny, K. Goldberg. Deep Imitation Learning of Sequential Fabric Smoothing from an Algorithmic Supervisor. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2020.
16. A. Ganapathi, P. Sundaresan, B. Thananjeyan, A. Balakrishna, D. Seita, **R. Hoque**, J. Gonzalez, K. Goldberg. MMGSD: Multi-Modal Gaussian Shape Descriptors for Correspondence Matching in 1D and 2D Deformable Objects. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* Workshop on Managing Deformation, 2020.

HONORS AND AWARDS

Oral Presentation, Conference on Robot Learning (CoRL) 2022 in Auckland, New Zealand	FALL 2022
Keynote Speaker at Algorithmic Futures' Human-Machine Collaboration (HMC) 2022 in Paris, France	FALL 2022
Oral Presentation, Conference on Robot Learning (CoRL) 2021 in London, UK	FALL 2021
UC Berkeley Quantedge Award for Academic Excellence	FALL 2018
Best Web App at Cal Hacks, the World's Largest Collegiate Hackathon	NOV 2016 & 2017
UC Berkeley Edward Frank Kraft Award	FALL 2016
Outstanding Academic Achievement in Mathematics - top math student in graduating class of 400+	MAY 2016
National Merit Scholarship - Merit-based award for approx. 7,000 students out of 1.5 million	MAY 2016

PROFESSIONAL SERVICES

Organizing Committee for Conference on Robot Learning (CoRL) 2022
Program Committee for Robot Learning Workshop at NeurIPS 2023
UC Berkeley EECS Graduate Admissions Committee 2023
Teaching Assistant for EE 16B: Designing Information Devices and Systems II, Spring 2024
Head Teaching Assistant for IEOR 375: GSI Proseminar on Teaching Engineering, Fall 2023
Program Committee for Safe and Robust Control Workshop at NeurIPS 2021
Volunteer Manager of Berkeley AI Research Social Media (130K+ Followers)
Keynote Speaker for Berkeley HKN EECS Day 2022 (outreach event for 100+ high school students)
AI Student Lead for UC Berkeley EECS PhD Visit Days for prospective students in 2022 and 2023
Mentor for the BAIR Undergraduate Mentoring Program in Spring 2022
Reviewer for Robotics: Science and Systems (RSS), Conference on Robot Learning (CoRL), IEEE International Conference on Robotics and Automation (ICRA), IEEE International Conference on Intelligent Robots and Systems (IROS), Applied Mathematical Modelling, Neural Information Processing Systems (NeurIPS), IEEE Transactions on Robotics (T-RO), IEEE Robotics and Automation Letters (RA-L), ACM Transactions on Human-Robot Interaction (THRI)
Mentored Carl Putterman (2020-2021), Aditya Ganapathi (2020-2022), Albert Wilcox (2021-2022), Kaushik Shivakumar (2021-2022), Shrey Aeron (2021-2022), Anrui Gu (2022-2023), Satvik Sharma (2022-), Gaurav Datta (2022-)