Curriculum Vitae

Haolun (Harry) Zhang

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Education

August 2017—May 2021
Degree: Bachelor of Science in Electrical Engineering & Computer Science
Institution: University of California, Berkeley
GPA: 3.9 of 4.0
Graduated with High Honors and Department Award for Designs. Minor in Mechanical Engineering

August 2021—Present
Degree: Master of Science in Robotics
Institution: Carnegie Mellon University Robotics Institute
GPA: 4.0 of 4.0
Expected graduation in August 2023

Research

August 2021—Present
Lab: Carnegie Mellon University, Robotics Institute
Interests: Deep reinforcement learning, representation learning, 3D vision
Advisors: Prof. David Held
Experience:

- Research on representation learning methods for fast policy transfer in learning-from-demonstration problems.
- Devise policy learning and transfer learning frameworks for complex articulated objects manipulation tasks.

April 2019—May 2021
Lab: Berkeley AI Research
Interests: Reinforcement learning, deep learning, vision, control theory
Advisors: Prof. Ken Goldberg, Dr. Jeffrey Ichnowski
Experience:

- Research on deep learning, computer vision, control theory, and their applications in robot learning.
- Research projects involve efficient 6-DoF grasping, dynamic deformable objects manipulation, visuomotor control, and 3D vision.

Publications

Huang Huang*, Jonathan Wang*, Vincent Lim*, **Harry Zhang**, Jeffrey Ichnowski, Daniel Seita, Yunliang Chen, Ken Goldberg, "Self-Supervised Learning of Dynamic Planar Manipulation of Free-End Cable". *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, October 2021 (Under Review).

Yahav Avigal*, Vishal Satish*, **Harry Zhang**, Huang Huang, Michael Danielczuk, Jeffrey Ichnowski, Ken Goldberg, "AVPLUG: Approach Vector Planning for Unicontact Grasping amid Clutter". *IEEE Conference on Automation Science and Engineering (CASE),* August 2021.

Harry Zhang, Jeffrey Ichnowski, Daniel Seita, Jonathan Wang, Ken Goldberg, "Robots of the Lost Arc: Learning to Dynamically Manipulate Fixed-Endpoint Ropes and Cables". *IEEE International Conference on Robotics and Automation (ICRA)*, June 2021.

Shivin Devgon, Jeffrey Ichnowski, Ashwin Balakrishna, **Harry Zhang**, Ken Goldberg, "Orienting Novel 3D Objects Using Self-Supervised Learning of Rotation Transforms". *IEEE Conference on Automation Science and Engineering (CASE),* August 2020.

Harry Zhang, Jeffrey Ichnowski, Yahav Avigal, Joseph E. Gonzalez, Ion Stoica, Ken Goldberg, "Dex-Net AR: Distributed Deep Grasp Planning Using an Augmented Reality Application and a Smartphone Camera". *IEEE International Conference on Robotics and Automation (ICRA)*, June 2020.

Tech Reports

Harry Zhang, Yahav Avigal, Samuel Paradis, "6-DoF Grasp Planning using Fast 3D Reconstruction and Grasp Quality CNN". *ArXiv*, 2020

Harry Zhang, Priya Sundaresan, Aditya Ganapathi, Shivin Devgon, "Deep Correspondence Matching for Deformable Objects". *ArXiv*, 2019

Talks

Dex-Net AR Interview. *VentureBeat, Berkeley, CA*, June 2020.

Personal Projects

- **Open Source Deep RL Book.** Wrote a collection of notes on Deep Reinforcement Learning. Maintain and curate the notes on an open source repository, with 28 stars on Github. The book now is being extensively used in Berkeley's Deep RL course. *2019 - Present.*
- **Lyapunov-Constrained Safe Model-Based RL**. Investigate Lyapunov constraints to give better convergence guarantees for safety-augmented deep model-based RL algorithms such as SAVED and ABC-LMPC. *2020 - Present*

Teaching

CMU: Head TA of Computer Vision.

Berkeley: TA of Undergraduate CS Theory, Artificial Intelligence, Convex Optimization, Machine Learning.

Outreach and Service

- **Berkeley AI Research Blog Curator.** Help coordinate and maintain BAIR Blog and website.

- **Berkeley AI4ALL Co-Organizer.** Organize AI4ALL-Berkeley crash courses, and designed a 2-day project on computer vision for high school students.
- **Berkeley AI Research Ambassador.** Host lab tours and robot demos for middle school and high school students.

Honors and Awards

- Warren Y. Dere Design Award (2021)
- 5 Times UC Berkeley Dean's List (Top 10%, 2017-2020)
- Kraft Award for Freshmen Recipient (Top 1%, 2017)
- AAPT Physics Bowl US National Rank 24 in Division I.
- Mechanical Engineering Honor Society Pi Tau Sigma Member (Top 20%, 2018)
- Electrical Engineering Honor Society Eta Kappa Nu Member (Top 20%, 2019)
- Engineering Honor Society Tau Beta Pi Member (Top 15%, 2019)

Relevant Skills

- **Physical Robots:** Experience with UR5, YuMi, and Fetch.
- **Libraries:** Experience with matplotlib, Numpy/Scipy, various OpenAI libraries (gym, baselines, etc.), OpenCV, ROS, TensorFlow, PyTorch, Blender (for graphics rendering).
- **Programming:** Python, Java, C, C++, MATLAB.
- **Languages:** Fluent in Mandarin, English. Intermediate in Spanish
- **Other skills:** Google Cloud, docker, LaTeX, Ubuntu, vim