

Bernie Hao Zhu

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Research Interests

My work is **TRASH: Teaching Robotic Agents Skills of Humans**

Robotics, Embodied AI, Multimodal LLM

- Humanoid robotic manipulation
- Physical Embodied AI
- Human-robot interaction and alignment

Education

University of Washington

Seattle, WA

Ph.D. in **Computer Science & Engineering**

Sep 2022 - Present

I built, trained and worked with **Geodude**, a customized dexterous bimanual robot.

Zhejiang University

Hangzhou, China

B.Eng in **Computer Science**, with Minor in Electronic Engineering, **High Honors**

Jul 2017

Major GPA: 3.95/4.0, cumulative GPA: 3.87/4.0, rank: **Top 10%**

Experience

Self-employed

Africa

Mechanical Engineer

Feb 2022 - Jul 2022

Traveled across Africa and maintained laser cutting and wire EDM machine for local small-scale factories. Provided guide and interpretation services in Chinese, English, and Spanish as well.

Carnegie Mellon University

Pittsburgh, PA

Advisors: **Christopher G. Atkeson** and **Katerina Fragkiadaki**

Oct 2020 - Jan 2022

Robotic manipulation and vision-language models

University of California, San Diego

San Diego, CA

Advisor: **Hao Su**

Jun 2019 - 2020

SAPIEN and S⁴G.

Shanghai Jiao Tong University

Shanghai, China

Advisor: **Cewu Lu**

Jan 2018 - May 2019

CrowdPose and video understanding.

University of Alberta

Edmonton, AB

Advisor: **Russell Greiner**

Jul 2016 - Oct 2016

Patient-specific survival prediction (PSSP).

Publications

*Authors with equal contribution

Lessons Learned from Designing and Evaluating a Robot-assisted Feeding System for Out-of-lab Use

Amal Nanavati*, Ethan K. Gordon*, Taylor A. Kessler Faulkner, Yuxin Ray Song, Jonathan Ko, Tyler Schrenk, Vy Nguyen, **Bernie H. Zhu**, Haya Bolotski, Sriram Kutty, Atharva Kashyap, Raida Karim, Liander Rainbolt, Rosario Scalise, Hanjun Song, Yiren Qu, Maya Cakmak, Siddhartha S. Srinivasa

International Conference on Human Robot Interaction (HRI), 2025 (**Best Paper Nominee – Systems Track**)

Keywords: Human–Robot Interaction, Robotic Manipulation, Assistive Robotics

An Adaptable, Safe, and Portable Robot-Assisted Feeding System

Ethan K. Gordon*, Rajat K. Jenamani*, Amal Nanavati*, Ziang Liu, Haya Bolotski, Raida Karim, Daniel Stabile, Atharva Kashyap, **Bernie H. Zhu**, Xilai Dai, Tyler Schrenk, Jonathan Ko, Taylor A. Kessler Faulkner, Tapomayukh Bhattacharjee, Siddhartha S. Srinivasa

International Conference on Human Robot Interaction (HRI), 2024 Demo Track (Best Demo Award)

Keywords: Human–Robot Interaction, Robotic Manipulation, Assistive Robotics

Towards General Single-Utensil Food Acquisition with Human-Informed Actions

Ethan K. Gordon*, Amal Nanavati*, Ramya Challa, **Bernie H. Zhu**, Taylor A. Kessler Faulkner, Siddhartha S. Srinivasa

Conference on Robot Learning (CoRL), 2023

Keywords: Robotic Manipulation, Human–Robot Interaction, Assistive Robotics

VVS: Action Recognition with Virtual View Synthesis

Gao Peng, Yong-Lu Li, **Hao Zhu**, Jiajun Tang, Jin Xia, Cewu Lu

International Conference on Image Processing (ICIP), 2021

Keywords: Video Understanding

SAPIEN: A Simulated Part-based Interactive Environment

Fanbo Xiang, Yuzhe Qin, Kaichun Mo, Yikuan Xia, **Hao Zhu**, Fangchen Liu, Minghua Liu, Hanxiao Jiang, Yifu Yuan, He Wang, Li Yi, Angel X.Chang, Leonidas J. Guibas, Hao Su

Conference on Computer Vision and Pattern Recognition (CVPR), 2020 (Oral Presentation)

Keywords: Embodied AI, Robot Simulation, Robotic Manipulation, Object Understanding

S⁴G: Amodal Single-view Single-Shot SE(3) Grasp Detection in Cluttered Scenes

Yuzhe Qin*, Rui Chen*, **Hao Zhu**, Meng Song, Jing Xu, Hao Su

Conference on Robot Learning (CoRL), 2019 (Spotlight Presentation)

Keywords: Robotic Grasping, 3D Vision

CrowdPose: Efficient Crowded Scenes Pose Estimation and A New Benchmark

Jiefeng Li, Can Wang, **Hao Zhu**, Yihuan Mao, Hao-Shu Fang, Cewu Lu

Conference on Computer Vision and Pattern Recognition (CVPR), 2019 (Oral Presentation)

Keywords: Human Pose Estimation, Detection

Services

Reviewer Artificial Intelligence: ICLR, ICML, NeurIPS, AAAI
Computer Vision: CVPR, ICCV, WACV
Robotics: CoRL

Admissions UW CSE PhD program

Teaching

CSE 478 Autonomous Robotics

Teaching Assistant, Undergraduate Courses

University of Washington

Spring 2024, Winter 2025

CSE 473 Introduction to Artificial Intelligence

Teaching Assistant, Undergraduate Courses

University of Washington

Fall 2024

CSE Early Research Scholars Program (CSE-ERSP)

Research Mentor

Advised 2 undergraduates Aimee Shao and David Song on **Analysis of Interactions between 3D Object Parts**

UC San Diego

Oct 2019 - May 2020

Probability and Mathematical Statistics, C Programming, Java Programming

Teaching Assistant, Undergraduate Courses

Zhejiang University

2015

Honors

First Place, UW CSE Baking Competition	2023
Outstanding Graduates, Zhejiang University	2017
Scholarship for Outstanding Students, Zhejiang University	2012-2013, 2015-2016
Scholarship for Outstanding Merits, Zhejiang University	2012-2013, 2015-2016
Excellent Students Award, Zhejiang University	2012-2013

Skills

Robots (and their name)	Dual Barrett WAM Arm (Geodude), Kinova Jaco (ADA), Franka Emika Panda (YAP)
Programming Languages	Python, C/C++, Java, JavaScript, HTML, MATLAB, Verilog
Libraries and Softwares	ROS, PyTorch, Isaac Sim, MuJoCo
Miscellaneous	Cooking, Piano, Suona