

Haozhe Chen

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EDUCATIONAL BACKGROUND

University of Illinois at Urbana-Champaign, ECE Department Master of Science in Computer Engineering, GPA: 3.89/4.0	Urbana-Champaign, IL 08/2023-Current
University of Illinois at Urbana-Champaign, ECE Department Dual Bachelor of Science in Computer Engineering (with High Honors), GPA: 3.92/4.0 ♦ Teaching Assistant: ECE 220 Computer Systems & Programming	Urbana-Champaign, IL 2022
Zhejiang University, ZJU-UIUC Institute Dual Bachelor of Engineering in Electronic and Computer Engineering, GPA: 3.93/4.0	Haining, China 2022

SKILLS

Programming Languages: Python, Java, C/C++, SQL, HTML, JavaScript, CSS, Verilog, Matlab
Frameworks & Tools: Pytorch, ROS, IsaacSim, SAPIEN, Pymunk, Blender, SolidWorks, Creo, FreeRTOS, Vue.js
Relevant Coursework: Computer Vision, Machine Learning, Robotics // Random Process, Parallel Programming, Data Structures, Algorithms // Operating Systems, Architecture, Database, Distributed System, Networks, GUI Design

PUBLICATIONS

RoboVerse, UIUC, Submitted to RSS 2025 <i>Researcher & Developer, Lab of Prof. Pieter Abbeel</i>	Urbana-Champaign, IL 11/2024-01/2025
<ul style="list-style-type: none">Designed and developed a unified simulation framework for cross-simulator training and evaluationImplemented assets converter, object/robot loading, control, and state reading interfaces for MuJoCo and IsaacLabAchieved ~1000x acceleration in training by seamlessly transitioning from single-env to parallel-env simulatorLed reinforcement learning framework development, migrating HumanoidBench assets, tasks, and algorithms to MetaSimImplemented cross-simulator training and validation for enhanced generalization and robustness	
Dynamics-Guided Diffusion Policy, UIUC, ICRA 2025 (First Author) <i>Researcher & Developer, Lab of Prof. Yunzhu Li</i>	Urbana-Champaign, IL 04/2024-09/2024
<ul style="list-style-type: none">Realized few-shot training for diffusion policy by augmenting training demonstrations with a dynamics modelCut human demonstrations from 200 to 5 while keeping a success rate over 95% in tasks like InsertT and HangMugEstablished a simulation environment in Pymunk and trained the diffusion policy on keypoint-based dataTrained dynamics models and developed an interactive visualization tool for verificationApplied Model Predictive Path Integral (MPPI) to generate additional training demos from human few-shot demonstrationsBuilt a UDP-based ROS-like multi-processing framework for real-world robot control and a multi-camera system with the Iterative Closest Point (ICP) and FoundationPose algorithm for perception	

RESEARCH EXPERIENCES

General Navigation of Mobile Manipulation Robot <i>Researcher & Developer, Lab of Prof. Shenlong Wang</i>	Urbana-Champaign, IL 11/2024-current
<ul style="list-style-type: none">Built a real-world mobile manipulation robot with base, xArm, depth camera, and LiDAR, controlled with ROSDeveloped a full-featured digital twin in IsaacSim, integrating high-fidelity Scene converted from Unreal Engine 5 assetsEnabled real-time monocular 3DGS SLAM with Mast3r and Depth Anything, alongside 2D LiDAR-based SLAMExplored vision-language-based navigation, incorporating scene graphs and frontier-based exploration	
BiDex: Generalizable Bimanual Dexterous Manipulation <i>Course Project of ECE598JK Introduction to Humanoid Robotics, supervised by Prof. Joohyung Kim</i>	Urbana-Champaign, IL 02/2024-05/2024
<ul style="list-style-type: none">Applied reinforcement learning on the humanoid robot Atlas with dexterous Allegro hands in SAPIEN to learn bimanual decision-making policies for cooperation tasks, such as opening a laptop, lifting a pot, and tilting a bucketMitigated occlusion with proprioception and extracted semantic information with PointNet-based segmentation moduleDesigned rewards for multiple phases in each task and trained Proximal Policy Optimization (PPO) to complete the tasks	
Unsupervised Anomaly Detection on Image, ZJU-UIUC Institute <i>Research Assistant, Lab of Prof. Zuozhu Liu</i>	Haining, China 09/2022-06/2023
<ul style="list-style-type: none">Designed and trained a normalization flow-based anomaly detection model for image of industrial metal parts and enhance the detection performance on small-size defects by introducing clustering in graph theoryAchieved 89% success in detecting small-area anomalies, up from 20%, surpassing SOTA modelsSurveyed on and realized detection, classification, and localization of anomaly with supervised and unsupervised methods	
The RoboMaster Club, ZJU-UIUC Institute <i>Researcher & Developer & Leader of Visual Department</i>	Haining, China 09/2020-01/2021
<ul style="list-style-type: none">Developed and applied both traditional computer vision methods (PnP, Laplace operator, NMS, IOU) and a Faster R-CNN model to enable robot visual recognition of enemy units and vulnerabilities in camera footage	