

Haozhe Chen

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EDUCATIONAL BACKGROUND

University of Illinois at Urbana-Champaign, ECE Department Master of Science in Computer Engineering	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, SAPIEN, IsaacSim, SolidWorks, Creo, Blender, Pymunk, FreeRTOS
Relevant Coursework: Computer Vision, Machine Learning, Robotics, Random Process, Parallel Programming, Data Structures, Algorithms, Operating Systems, Architecture, Database, Distributed System, Networks, GUI Design

RESEARCH EXPERIENCES

Dynamics-Guided Diffusion Policy, UIUC, Submitted to ICRA (Under Review) <i>Researcher, 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 model♦ Established a simulation environment in Pymunk and trained the diffusion policy on keypoint-based data♦ Trained dynamics models and developed an interactive visualization tool for verification♦ Applied Model Predictive Path Integral (MPPI) to generate additional training demos from human few-shot demonstrations♦ Built 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	
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 industrial metal parts images and enhance the detection performance on small-size defects by introducing clustering in graph theory♦ Conducted in-depth survey on the anomaly detection task and realized detection, classification, and localization of anomaly with both supervised and unsupervised methods	

SELECTED PROJECTS

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 and dexterous hands Allegro in simulation (SAPIEN) to learn decision-making policies for bimanual cooperation tasks, such as opening a laptop, lifting a pot, and tilting a bucket♦ Appended imagined point cloud from proprioception to address occlusion and extracted semantic information from a PointNet-based segmentation module♦ Designed phases and corresponding reward functions for each specific task and trained Proximal Policy Optimization (PPO) as the reinforcement learning algorithm to complete the tasks	
3D Gaussian Splatting Reconstruction for Campus Building <i>Course Project of ECE549 Computer Vision, supervised by Prof. David Forsyth</i>	Urbana-Champaign, IL 08/2023-11/2024
<ul style="list-style-type: none">♦ Reconstructed a 3D model of the campus building from a drone video using 3D Gaussian Splatting techniques♦ Obtained instance segmentation mask sequence with large vision-language model and video object tracking model♦ Generated 3D Gaussians from the masked videos and aligned them with the original 3D model for segmentation♦ Unprojected the semantic features from the vision model onto Gaussian primitives	
Slack Alignment in Few-shot Supervised Visual Domain Adaptation <i>Course Project of ECE449 Machine Learning, supervised by Prof. Zuozhu Liu</i>	Haining, China 03/2021-05/2021
<ul style="list-style-type: none">♦ Implemented a Generative Adversarial Network (GAN) framework emphasizing the distinction of hidden features for object identification and domain identification to achieve few-shot domain adaptation on images	
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	