

Lixin Xu

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RESEARCH INTERESTS

I am deeply committed to advancing the field of robotics with a focus on the integration of cognitive and athletic intelligence to create robotics foundation models that could revolutionize our modern industry and society.

EDUCATION & INTERNSHIP

National University of Singapore *Singapore* June 2024-Present

Research Intern at School of Computing, Supervisor: Prof. Lin Shao

Georgia Institute of Technology *Atlanta, United States | Shenzhen, China* Expected Dec 2024

M.Sc. in Electrical and Computer Engineering GPA: 4.0/4.0

- Coursework: ECE 6258 Digital Image Processing(A), ECE 6122 Adv Prog Techniques(A), ECE 6550 Linear Sys and Control(A), CS 7641 Machine Learning(A), CS 7643 Deep Learning(A), CS 7638 AI for Robotics(A), etc.

Qingdao University *Qingdao, China* June 2021

B.Sc. in Mechanical Engineering GPA: 90.96 / 100 (Top 1%)

- National Scholarship, Ministry of Education of China

PUBLICATIONS

CrossDex: A Modular Framework for Cross-Dexterous-Hand Manipulation | *On-going*

- Zixuan Liu*, Lixin Xu*, Junting Chen, Haoyu Zhou, Lin Shao
- Cross-embodiment policy with pre-trained diffusion-based Reinforcement Learning in Isaac Gym environment

Evaluation of Transportation Systems and Novel UV-Oriented Solution for Integration, Resilience, Inclusiveness and Sustainability | *2020 5th International Conference on Universal Village (UV), Boston, MA, USA, 2020.*

- Lixin Xu, L. Li, K. Liu, J. Zhang, Y. Chang, Y. Fang, H. Yuan, Z. Yang, J. Chen, and Y. Fang.
- Survey of intelligent transportation systems for smart cities with perspectives of information flow, material cycle, etc.

PROJECT EXPERIENCE

Digital Twin-based Advanced Control of a Pneumatic Parallel Manipulator | Jan. 2023 - Jan. 2024

- Kinematics and dynamics analysis, disturbance rejection control, nonlinear controllers and observers

Monocular Depth Estimation - FADE Ain't Depth Estimation | *CS 7643* Feb 2022 - May 2022

- Involved deep learning experience on large-scale networks focusing on depth estimation.
- Exploration and evaluation of current boosting methods with MiDaS and LeRes.

An Attention-Based Video Inpainting Technique for Wire-Removal Scenarios | *ECE 6258* Sep 2021 - Dec 2021

- Proposed an autoencoder-based video inpainting model for wire-removal in movie scenes.

C++ Simulation, Games and Visualization | *ECE 6122* Oct 2021 - Dec 2021

- GaTech Buzzy Bowl, a multi-threaded 3D simulation using OpenGL
- Buzzy's Revenge, a multimedia game based on SFML library
- CUDA-based thermal conduction simulation

An ORB-based Stereo Vision Odometry | *Undergrad thesis* Jan 2021 - Jun 2021

- Designed PyVO (Python Visual Odometer), an ORB-based visual stereo odometer.

The 6th National Engineering Training Competition - Material Handling Robot | *Special Prize* Dec 2018 - Jun 2019

- Built a STM32-based Mecanum Wheel robot with OpenMV for object recognition.

College Robots Contest of Shandong Province - Biped robot | *Second Prize* Jul 2018 - Oct 2018

SKILLSET

Programming and tools Python/PyTorch, C/C++, Isaac Gym, MATLAB/Simulink, ROS, Cmake, \LaTeX , Solidworks

ML & Decision Making Generative Models, Reinforcement Learning, LLM/VLM

Control & Actuation Nonlinear control, disturbance rejection control, dynamics modeling

Languages Mandarin(native), English(IELTS 7.5, GRE 322), German(A2), Japanese(N4)