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

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

M.S. in Electric 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.

Tianjin University *Tianjin, China* Expected May 2024

M.S. in Instrument Science and Technology GPA: 90.46/100

- National Scholarship, Ministry of Education of China

Qingdao University *Qingdao, China* June 2021

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

- National Scholarship, Ministry of Education of China

SKILLSET

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

Sensing & Perception Kalman Filtering, Localization and Mapping, 3D Computer Vision

ML & Decision Making Deep Learning, Reinforcement Learning, Large Language Model

Control & Actuation Nonlinear control, adaptive control, optimal control

Languages Mandarin(native), English(IELTS 7.5), German(A2), Japnese(N4)

ACADEMIC & PROJECT EXPERIENCE

Digital Twin-based Advanced Control of a Pneumatic Parallel Manipulator | *Tianjin University* Jan. 2023 - Present

- Publication: L. Zhao, **L. Xu**, et al., "Nonlinear Decoupling Control for a 3-PSS Pneumatic Parallel Manipulator with Rodless Pneumatic Cylinders", *IEEE/ASME Transactions on Mechatronics* (under review)
- Digital twin-based bilateral control for a 3-PSS pneumatic parallel manipulator.

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

- Hands-on experience on PyTorch, familiarized with computer vision and image processing approach.
- An encoder-decoder-based model for inpainting.

GaTech Buzzy Bowl Game | *ECE 6122* Oct 2021 - Dec 2021

- Multi-threaded 3D simulation using OpenGL.

An ORB-based Stereo Vision Odometry | *Qingdao University* Jan 2021 - Jun 2021

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

Universal Village Program | *Boston, United States* Jul 2020 - Apr 2021

- Intelligent transportation systems for smart cities with information flow, material cycle, lifestyle and community.
- Publication: **L. Xu** et al., "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, pp. 1-63.

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.