Xiaozhu Lin

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Education

China Ji Liang University **Zhejiang, China**

- School of Optics and Electronics Technology Sept. 2017- June. 2021
- Electronic Science and Technology
- GPA 3.74

ShanghaiTech University **Shanghai, China**

- School of Information Science and Technology Sept. 2021- Present
- Computer Science and Technology
- GPA 3.45

Research Interest

Robotics, Reinforcement Learning, Data-driven Control, Adaptive Control.
Using the interactive **data** for system modeling, **control** and disturbance rejection, and also to address **Sim2Real** problem.

Publication

- **Xiaozhu Lin**, Xianglong Tan, Longchuan Wang, Andre Rosendo. 3D printed Optimization: Bayesian Neural Network Trade-Off between Cost and Load-Bearing[C]//2021 IEEE International Conference on Robotics and Biomimetics (ROBIO). IEEE, 2021: 1564-1569.
- **Xiaozhu Lin**, Wenbin Song, Xiaopei Liu, Xuming He, Yang Wang. Exploring learning-based control policy for fish-like robots in altered background flows. 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).

Internship

Advanced Technology Research Institute of Zhejiang University **Zhejiang, China**

- Embedded Engineer March. - May. 2021
- Embedded Development of Sensor Data Acquisition Board

Awards

- China Ji Liang University Outstanding Student Award

Scholarship

- National Scholarship
- Zhejiang Province Government Scholarship
- TOSPO Enterprise Scholarship, Supmea Enterprise Scholarship

Competition

- The 15th National Undergraduate Smart Car Contest (National 1st Award)
- 2019 National Undergraduate Electronic Design Contest (National 2rd Award)

Competition & Project

The 15th National Undergraduate Smart Car Contest **August. 2020**

- It worth to know that we are NOT be allow to use integration package e.g. ROS.
- I almost cover ALL jobs in algorithm, programming, structure and PCB.
- Image Part: dynamic binarization, roadway recognition, fast lane line search, desired trajectory generation.

- Control Part: Ackermann differential active adjustment, cascade PID for speed control, Nonlinear servo curve fitting for direction control.

2019 National Undergraduate Electronic Design Contest **August. 2019**

- What we do is an **Electromagnetic Gun** for target shooting without ROS.
- Image Part: target detection and following, distance calculation.
- Control Part: servo control for muzzle angle adjustment, nonlinear servo curve fitting.

Optical Interference based MPO Fiber Connector Inspection System **April. 2018**

- Using interference images of fiber connector to reconstruct the 3D images.
- Identify various parameters of the connector using 3D images.

Deep Learning Based Optical Fiber Defects Detection System **May. 2021**

- Undergraduate Thesis
- Design a novel framework to detect the defects of optical fiber using Yolov3(ResNet) and OpenCV.

CS283 Robotic Course Project: Learn to Fold (Paper Re-production) **June. 2023**

- Using Reinforcement Learning algorithm to train a policy that can learn to fold the towel with manipulator from offline random interaction.
- Without simulator or human demonstration, only random interaction data in real world.

Research

LIMA Lab, ShanghaiTech University **August. 2021 - April. 2022**

- Learning Reinforcement Learning and Deep RL algorithms.
- Learn a little bit about the Quadruped robot from the senior student in this lab.
- Using Deep RL algorithm to train a policy that can control the inverted pendulum from trial and error without model.

MAgIC Lab, ShanghaiTech University **May. 2022 - Present**

- Exploring learning-based control policy for fish-like robots in altered background flows via Reinforcement Learning.
- Establishing a prototype of robotic fish and built a testing platform, including the top camera and the pool.
- Investigating the data-driven model and control methods, e.g. Koopman Operator, Dynamic Mode Decomposition and SINDy algorithm.
- **Trying to address the Sim2Real gap in robotic fish via applying the data-driven control methods e.g. Koopman operator.**

Skill

Machine Learning

NN[familiar], Reinforcement Learning[familiar], CNN[more than basic], RNN[basic].

Programming

Python[familiar], C[familiar], C++[basic], MATLAB[basic].

Packages

Numpy[familiar], OpenAI Gym[familiar], PyTorch[familiar], OpenCV[familiar].

Embedded

STM32[super familiar], ESP32[familiar], Arduino[super familiar], Keil[familiar].

Mechatronics

Fusion 360[more than basic], 3D Printer[basic], Solidworks[basic], Altium Designer[basic].