

Xinyue Yao

Bachelor of Robotics Engineering
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Zhejiang University, Hangzhou, China

RESEARCH INTERESTS

Embodied AI, Robot Planning and Control, State Estimation...

EDUCATION

Zhejiang University, Hangzhou, China
Bachelor of Engineering in Robotics

Sep. 2021 — Present
Cumulative GPA: 3.72/4.00, Major GPA: 3.85/4.00

PROJECTS

Research Assistant for Embodied AI
Longitudinal Project

Hangzhou, China
Mar. 2023 — Present

- Doing internship in APRIL Lab, advised by Prof. Yong Liu
- Training LLM for manipulator to perceive and execute.
- Collaborated on the decision-making and planning part.

LiDAR Fusion Based Algorithm Implementation for UAV
Crosswise Project

Hangzhou, China
Dec. 2023 — Present

- Executed tasks related to algorithm implementation on UAV.
- Collaborated on the LiDAR hardware.

Path Planning and Obstacle Avoidance for UAV
Robotics II Course Project

Hangzhou, China
Nov. 2023 — Jan. 2024

- Collaborated in a four-person group, focusing on UAV trajectory planning.
- Involved in the sim-to-real process, including simulation environment setup, algorithm design, and practical testing.
- My responsibilities include algorithm design, hardware debugging.

Robotic Arm Modeling and Control
Robotics I Course Project

Hangzhou, China
Sep. 2023 — Nov. 2023

- Collaborated in a four-person group, focusing on robotic arm trajectory planning and force control.
- Led the project involving robotic arm modeling, CoppeliaSim simulation, trajectory planning, and force control.
- My responsibilities include robotic arm modeling, trajectory planning.

3D Model Displayer based on OpenGL
OOP Course Project

Hangzhou, China
Mar. 2023 — Jun. 2023

- Designed and implemented a software for loading and displaying 3D models using OpenGL.
- Included the design of classes, templates, UI, shaders, etc.

Design and Build a Line-tracking Robot from Scratch
Practice Project

Hangzhou, China
Aug. 2022 — Sep. 2022

- Led a four-person group in completing a robot competition topic.
- Designed and assembled a moving robot with a manipulator for tasks including image detection, line-tracking, and object grasping.
- Responsible for the design and assembly of the entire robot, especially the manipulator, and participated in Arduino programming to control motors and servos.

SELECTED COURSES

Bachelor's Courses

- **Robotics I:**
 - This course introduces theories and engineer knowledge of machine operation in industry robots. It covers the operating arm kinematics and inverse kinematics in the basis of space description and transformation, velocity and static force Descartes transformation, operating arm kinetics in the basis of Newton equation and Euler equation, path description and trajectory generation, and operating arm linear and nonlinear control.
- **Robotics II:**
 - This course mainly introduces the basic knowledge of autonomous mobile robots, including kinematics modeling, navigation planning, map representation, environment perception, autonomous localization, simultaneous localization and mapping, and etc.
- **Computer Vision:**
 - This course introduces fundamentals of image formation, image edges, local features, curves, camera imaging geometry, camera calibration, stereo vision, motion estimation and tracking, feature matching and image stitching, image segmentation, visual recognition, and convolutional neural networks.
- **Artificial Intelligence and Machine Learning:**
 - This course covers the basic knowledge in machine learning, mainly including foundations of statistical learning, Bayesian and frequentist viewpoints to data analysis, and an introduction of deep learning in computer vision and NLP.
- **Embedded System:**
 - This course introduces fundamentals of embedded system, interface technology and programming skills based on the 8051 and ARM chip.
- **Signals and System:**
 - This course includes the basic concepts, principles, and methods for analyzing linear and time-invariant systems. Both the continuous-time and discrete-time systems are parallel discussed in the contents. Transforms among time domain, frequency domain, and complex frequency domain are elaborated.
- **Principles of Automatic Control:**
 - This course introduces formulation of control problems in time domain, complex-frequency domain and state-space, different system representation methods (block diagram, transfer function and signal flow graph), analysis and design methodologies in time and frequency domain including root-locus and frequency-response methods.

Additional Courses

- **Object Oriented Programming(C++)**
- **Data Structure**
- **C Programming Language**

OTHER EXPERIENCES

Club Assistant for the Handicraft Club

Club Assistant

Hangzhou, China
Sep. 2021 — Present

- My responsibilities include organizing handicraft activities, external communication, and conducting handicraft teaching sessions.

SKILLS

- **Programming:** C/C++; Python; Pytorch
- **ROS:** Basic knowledge
- **Software:** Basic knowledge on Solidworks