

# Hanyu Zhang

Zhejiang, China

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## About

I am an engineering undergraduate at Zhejiang University with a strong interest in mathematics and physics. Fascinated by control theory, I aspire to develop new methods in areas like robot control.

## Education

**Zhejiang University, China**

2022-present

*Bachelor of Engineering in Automation    Chu Kochen Honors College "Mixed Class"*

- College of Control Science and Engineering
- **GPA:** 92.88/100 (4.19/4.30)    **Ranking:** 1/121
- **Minor in** *Physics*
- **Core Courses:**

**M**athematics: Calculus (97/100), Mathematical Analysis (97/100), Linear Algebra (97/100), Probability and Statistics (98/100), Statistical Learning (95/100)

**P**hysics: General Physics(I) (97/100), Mathematical Physics(I) (96/100)

**P**rogramming: Fundamentals of C Programming (96/100), Embedded System (95/100)

**E**ngineering: Principles of Automatic Control (96/100), Modern Control Theory (95/100), Electric Circuit and Analog Circuit (96/100), Signal Analysis and Processing (95/100), Intelligent Control (97/100)

## Scholarship & Awards

**National Scholarship, Ministry of Education**

2023-2024

**The First Prize Scholarship of Zhejiang University, Zhejiang University**

2023-2024

## Research Interest

Control Theory, Physical Modeling, Controller Design and Optimization, Statistical Learning, Interdisciplinary Fields of Physics and Engineering.

## Research Experience

**Hardware and Control Algorithm Design**

October 2024

Advisor: Prof. Tiefeng Li    *Center for X-Mechanics, Zhejiang University*

I am currently engaged in this project, which is inspired by the buoyancy mechanisms of marine mammals. It focuses on the development of control algorithms for devices that modulate buoyancy through the phase transition of paraffin wax. This involves conducting hardware experiments, constructing physical models, and performing simulation analyses in *Simulink*. Additionally, the research explores the potential application of these devices in extreme high-pressure environments.

**Student Research Training Program**

March 2024

Advisor: Prof. Rong Xiong    *College of Control Science and Engineering, Zhejiang University*

I led a student research training program about robotic arm grasping tasks using the visual servo method. This work builds on existing research. During a peg-in-hole experiment, we capture raw images using an RGB camera, segment the peg and hole, and then use a network to determine the position and orientation deviations. The robotic arm's end-effector is then adjusted accordingly to achieve accurate insertion.

We have trained the network using data obtained from *PyBullet* simulations. The project is currently in its final stage, involving the setup on a small-scale physical robotic arm and subsequent adjustments. The project was conducted at Zhejiang University and the Zhejiang Humanoid Robot Innovation Center.