RONGKUI ZHANG

Tsinghua University
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EDUCATION

Tsinghua University   Beijing, China
Bachelor's in Mechanical Engineering (Experimental Class)   Sep 2022 – Present

Sep 2022 – Present
- Major GPA: **3.74/4.00**;
- Ranked **top 20%** in the department,with strengths in robotics, embodied AI, control systems, and mechatronic design.

SELECTED AWARDS AND HONORS

Tsinghua University Scholarship (**top20%**, awarded for academic excellence)   2022-2023
Tsinghua General Scholarship (**top10%**, awarded for general excellence)   2024-2025

ACADEMIC PROJECT

● *AutoBio: A Simulation and Benchmark for Robotic Automation in Digital Biology Laboratory*   *March.2025*

  (ICLR 2026 Submission, 5th Author)

  - Carried out multi - stage modeling and simulation for laboratory instruments. This involved 3D modeling with SolidWorks/Blender and then defining the XML of relevant instruments (test tubes) in MuJoCo. Physical accuracy for robot - scene interaction was ensured through collision model and visual model modeling.
  - Developed robot operation logic for benchmark tasks in MuJoCo. Implemented motion algorithms and trajectory planning for Aloha/UR5e robotic arms to achieve simple tasks such as nut operation and test tube capping, as well as complex tasks like mixing (accounting for one - third of the tasks in the paper). Perturbation was performed using random seeds to provide expert data for subsequent VLA training.

● *Robotics-Controlled Chess and Drawing System with QARM Robotic Arm (Team Leader)*   *Dec.2024*

  - Designed and developed a QARM four-axis robotic arm system enabling human-machine interaction for chess-playing and drawing tasks**(Patent Pending, Application No. 202510598609.1, 1st Inventor)**.
  - Integrated 3D-printed end-effector components, distributed system architecture, and TCP/IP communication to enhance flexibility and precision. Implemented decision-making algorithms using Visual Studio and D-H kinematics in MATLAB/Simulink for motion control.

● *Mechatronic System Design Practice (Team Leader)*   *Jul.2024*

  - Led a 3-person team to design and build a fully autonomous vehicle from scratch, achieving **Tsinghua University's best-ever line-tracking performance**.
  - Engineered custom mechanical systems using SolidWorks and AutoCAD, with 3D-printed components. Developed and implemented the vehicle's hardware and software systems using C in the STM32 framework, including debugging, architecture design, and algorithm development.
  -Achieved multiple tasks such as object grabbing, line tracking, obstacle avoidance, and maze solving,

● *Robotics Winter Camp, Tsinghua University (Team Leader)*   *Jan.2023*

  -Led a team to design a robotic car using SolidWorks and implemented route selection and high-speed tracking algorithms with C.
  -Demonstrated proficiency in microcontroller hardware debugging and image processing.

INTERNSHIP

● *AI & Robotics Lab, Tsinghua University Shenzhen Graduate School*   *Beijing, China*

  - Calibrated and operated motion-capture systems (OptiTrack & Motive) to collect spatial and kinematic data from a six-axis robotic arm. Established real-time communication with MATLAB for simulation modeling and inverse kinematics calculations.
  -Conducted error correction, data interpolation, and time-series data processing to support data-driven robotic arm control for research projects.