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: 3.73/4.00;
- Ranked top 20% in the department,with strengths in robotics, embodied AI, control systems, and mechatronic design.

SELECTED AWARDS AND HONORS

Tsinghua University Scholarship, sponsored by Weichai Power (top30%, awarded for academic excellence) 2022-2023
Tsinghua General Scholarship (top20%, awarded for general excellence) 2023-2024

ACADEMIC PROJECT

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

(NeurIPS 2025 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.