Zilin Chen

Room 235, Student Department 28#, Tsinghua University, Beijing, 100084, P. R. China
(+86)189-9550-1708 chenzili22@mails.tsinghua.edu.cn

EDUCATION

School of Mechanical Engineering, Tsinghua University, Beijing, China Aug 2022 - present

B.E. in Mechanical Engineering

Current overall GPA until **sophomore**: 3.62/4.0 (Top 30%)

Standard English Tests: IELTS: Total 7.5 (Reading 8.5, Listening 8.5, Speaking 6.0, Writing 6.5)

Core Courses:

- Fundamentals of Computer Program Design (A)
- Mechanical Engineering Mechanics (1) (A+)
- Physics for Scientists and Engineers B (2) (A)
- Lab. of Physics B (1) (A-)

Selected awards:

- Literary and Art Scholarship (2023, 2024)
- Best social practice team Leader (2024)

Research interest: Automated control and trajectory planning, dynamics control

Department of Mechanical & Industrial Engineering, University of Toronto, Ontario, Canada Sep 2024 – Dec 2024

Exchange student in Mechanical Engineering

Major courses GPA for this semester: 3.9/4.0

Courses:

- Kinematics and Dynamics of Machines (A-)
- Fluid Mechanics I (A)
- Circuits with Applications to Mechanical Engineering Systems (A+)

RESEARCH EXPERIENCES

Collaborative Robots Design | Research Assistant Feb 2024 – Dec 2024

Advisor: Ze Wang, professor and assistant dean at School of Mechanical Engineering, Tsinghua University

- Summarized current research progress on Motion Trajectory Planning of Two-arm Collaborative Robot
- Improved the stability on the end effector of a Two-arm Collaborative Robot
- **Analyzed the workspace** and constraints of the robot to prevent collisions between the two-arm Collaborative Robot
- Collaborated with a team of four to design different robot configurations to improve stiffness

Robot trajectory planning | Research Assistant May 2024 – July 2024

- Published on 9th IEEE International Conference on Advanced Robotics and Mechatronics, won the Best paper award in advanced robotics
- Planned the trajectory for a seven degree of freedom robot, based on Franka Robot
- Utilize charts to visually represent the changes in velocity, acceleration and jerk
- Employed multiple solutions to solve the time requirement to pass through the same set of waypoints, and compare them through velocity, acceleration, and jerk

Intelligent Vehicle Design | Group Leader July 2024

- Led a team of three in designing an autonomous car-shaped vehicle capable of transporting objects from start to finish
- Integrated advanced features including **line-following, obstacle navigation,** destination location, and Bluetooth connectivity for remote control
- Acquired proficiency in utilizing PID control algorithms to fine-tune input parameters for precise motor control
- Utilized an STM32 microcontroller for vehicle control and Open MV for image capture (**computer vision**), trajectory planning, and dynamic output management

UTAT Autonomous Drone Racing Team | Research Assistant Sep 2024 – present

Advisor: Hugh H.T. Liu, Professor & Director of the Centre for Aerial Robotics Research and Education, University of Toronto

- Helped with tests over ESC switching frequency and speed curve
- **Built a simulator** for a racing drone, mainly focus on the controller part, extract from the open-source project and convert it into a usable version for the onboard computer
- **Planned the yaw-axis trajectory** for the racing drone, under a given routine and gates, using CasADi as solver to solve for the optimal question
- Increasing the time for the drone to have a view of the gate, improving positioning accuracy

LEADERSHIP AND ACTIVITIES

Tsinghua University Symphony Orchestra | CCYL Tsinghua University Committee **|** Vice President Aug 2023 – July 2024

- Coordinated the orchestra to participate in the 7th National College Student Art Exhibition, and won the top prize
- Responsible for daily management of the orchestra and organizing the daily training
- Organized multiple concerts with at least 100 audience and 30 performers for each concert

Student Social Practice Team | CCYL Mechanical Engineering Committee | Project Leader Jan 2024 - Mar 2024

- Recruited 14 members on campus and invited 2 students from HUST and TJU to participate
- Visited multiple mechanical industry cooperations and communicated with frontline engineers
- Awarded the Golden Award for Social Practice in the Department, and personally awarded the Best Team Leader

SKILLS

Metal craftsmanship and industrial robot experiment skills

Programming Languages: proficient in C & Python & MATLAB, familiar with Java & C++

Office Applications: Microsoft Office, Photoshop, Auto CAD, SolidWorks, Multisim