CHEN Ziyu

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EDUCATION

Shanghai Normal University Shanghai, China
Bachelor Degree, Major in Mechanical Design, Manufacturing and Automation 09/2020-06/2024

- GPA: 3.59/4.00; 89.75/100
- Class Rank: 1/30
- Major Rank: 2/76

The University of Hong Kong HongKong SAR, China
Master of Science in Engineering, Major in Mechanical Engineering 09/2024-11/2025

PUBLICATIONS

Title: "Dynamic Optimization of Mechanism Parameters of Bipedal Robot Considering Full-Range Walking Energy Efficiency"
Status: Published in Appl. Sci(JCR Q1). 2023, 13(19), 10791
Role: First Author
DOI: https://doi.org/10.3390/app131910791

Title: "Bionic Mechanism and Adaptive Control Pattern of Bipedal Robot Walking on Slopes Based on Zero-Point Slope"
Status: Under review in Robotics and Autonomous Systems
Role: First Author

Title: "Appending Propellers to Leg for Enhancing Robustness of Hopping Locomotion"
Status: Accepted by CLAWAR 2025
Role: Second Author

PATENTS

Patent for Utility Model: Double Arm Robot
Role: First Inventor

- Developed a dual arm robot with a single MCU control system.
- Enabled human-like arm movements and synchronized control for improved efficiency.
- Versatile applications across industrial production, hazard handling, national defense, and aerospace.

RESEARCH PROJECTS

A Minimalistic 3D Hopping Robot with Parallel 3-RSR Mechanism 11/2024 - 05/2025

- Developed a propeller-enhanced hopping robot with optimized 3-RSR parallel leg mechanism, achieving stable locomotion through strategic thruster placement and dynamic torque balancing.

- Created a hybrid control system integrating leg dynamics and propeller thrust allocation, implementing real-time QP-based optimization for disturbance rejection (20° recovery capability).
- Built an embedded control architecture with real-time processing using Simulink/Raspberry Pi, validated through co-simulation and hardware experiments.

Biped Robots for Artificial Intelligence Education 12/2021 - 09/2024

- Led research for project: focused on mechanical structure design (four-link mechanism), humanoid robot controller system, and bipedal robot gait planning (ZMP and MPC control).
- Designed the configuration of a bipedal robot based on a four-bar linkage mechanism to elevate the knee joint, enhancing the overall humanoid characteristics of the robot.
- Conducted research on the controller system of educational humanoid robots, including investigating the main control system of Jetson nano, developing a robot motion control system based on ESP32, and designing foot sensors based on multi-point pressure.
- Implemented gait planning using intelligent control algorithms, employing ZMP and MPC algorithms to ensure stable gait and optimize the trajectory of bipedal robots.

Contactless Epidemic-Focused Delivery Robot with SLAM Autonomous Navigation
11/2022 - 09/2024

- Led research on autonomous navigation and positioning of contactless delivery robots based on SLAM, achieving higher accuracy by integrating IMU and camera data.
- Designed and executed path planning and obstacle avoidance for contactless delivery robots, utilizing geometric methods to create environment maps and optimizing path planning with graph search algorithms.
- Created a full control and guidance system for contactless delivery robots, featuring a user-friendly speech recognition component.

Creating a 6-DOF Servo Robot Arm for Engineering Education 09/2022 - 09/2024

- Led the design and implementation of a six-degree-of-freedom servo robotic arm for engineering literacy education (provincial-level).
- Conducted configuration and performance analysis of the robotic arm, utilizing the small elephant robotic arm as a reference, to create an educational tool tailored to teaching scenarios.
- Utilized Adina for mechanical analysis, performing static structural analysis to ensure the robotic arm's structural integrity and dynamic performance.
- Managed the physical assembly of the robotic arm, overseeing servo control through the upper computer and assembly and testing of the 3D printed physical prototype.

PROFESSIONAL EXPERIENCE

Research Assistant, Jiaxing Chuangjie Intelligent Technology Co., Ltd. 01/2021 - 05/2024

- Assist in writing two utility model patents, a robot dual arm structure and robot, a dual arm robot.
- Assisted in the design of multiple commercial project institutions: production type TS-R450-v7.0 mobile robot, AGV charging car, visual inspection equipment cabinet, six axis mechanical arm, football robot, electric push rod.
- Successfully sold the football robot to sports schools like Shanghai Institute of Sports, realizing commercial value.

Engineering Intern, Changzhou ANT Machinery Technology Co., Ltd 07/2023 - 10/2023

- Responsible for providing technical support to the technical department, drawing and making physical objects, and contacting the factory.
- Participate in research and development projects, collaborate with engineering teams, and assist them in designing, developing, and testing various functions and performance of robotic arms.

Research Assistant, The Chinese University of Hong Kong 11/2024 - 05/2025

- Developed a propeller-enhanced hopping robot with optimized 3-RSR parallel leg mechanism, achieving stable locomotion through strategic thruster placement and dynamic torque balancing.
- Created a hybrid control system integrating leg dynamics and propeller thrust allocation, implementing real-time QP-based optimization for disturbance rejection.
- Built an embedded control architecture with real-time processing using Simulink/Raspberry Pi, validated through co-simulation and hardware experiments.

AWARDS & PRIZES

- Excellent graduate of ordinary colleges and universities in Shanghai
- Excellent student of Shanghai Normal University
- Professional Scholarship at Shanghai Normal University
- Excellent graduate from the experimental class of intelligent manufacturing innovative talents training in the School of Information and Electromechanical Engineering of Shanghai Normal University
- Excellent Intern of School of Information and Electromechanical Engineering, Shanghai Normal University
- Provincial Excellence Project in Shanghai College Student Innovation and Entrepreneurship Training Program - "Design of Bipedal Robot System for Artificial Intelligence Education", project leader
- Second Prize in the 8th "Huichuang Youth" Cultural and Creative Works Exhibition Activity for Shanghai University Students

- Excellence Award in 2022 Shanghai College Student "Creation Cup" Competition, project leader
- First Prize in the 7th National College Business English Competition
- Second Prize at the 13th National College Student E-commerce Challenge Competition for Innovation and Entrepreneurship, project leader
- Bronze Award in the Undergraduate Group at the 8th China International "Internet+" College Student Innovation and Entrepreneurship Competition - Shanghai Normal University Competition, project leader
- Bronze Award in the Graduate Group at the 8th China International "Internet+" College Student Innovation and Entrepreneurship Competition - Shanghai Normal University Competition, project leader
- Third Prize in the 4th "Yongda Cup" Intelligent Car Competition, project leader
- Third Prize in the 5th "Yongda Cup" Intelligent Car Competition, project leader

LANGUAGES & IT SKILLS

- Languages: Chinese (Native), English (Fluent)
- Programming Languages: Python, C, C++
- Modeling & Simulation: SolidWorks, Catia, Fusion360, AutoCAD, Adina, MATLAB, Simulink, ROS
- Data Analysis & Technical Writing: SPSS, Origin, Axglyph, Overleaf (LaTeX), Microsoft Office, Adobe Photoshop, Premiere Pro