ZHENYANG CHEN

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3233 Post Woods Dr, Atlanta, Georgia, 30339

EDUCATION

Georgia Institute of Technology (Gatech) Sep 2022 - Present

MS in Robotics Atlanta, GA

Massachusetts Institute of Technology (MIT) Sep 2021 - May 2022

Exchange Program in Mechanical Engineering Cambridge, MA

- GPA: 4.9/5.0
- Selected through SUSTech-MIT committee, the only senior student in SUSTech MechE department (1/115)
- Coursework: Bio-inspired Robotics (A+), Underactuated Robotics (A), Robotics Science and System (A)

Southern University of Science and Technology (SUSTech) Sep 2018 - Jun 2022

B.E. in Robotics Engineering, Department of Mechanical Engineering Shenzhen, China

- GPA: 3.76/4.00
- Coursework: Robot Modelling and Control, Machine Learning, Modern Control and Estimation, Fundamentals of Engineering Optimization, Digital Image Processing, Ordinary Differential Equation B, Analog Circuit

SKILLS

- Programming: Python, MATLAB, C/C++, Java
- Hardware: Arduino, Raspberry Pi, Stm32 Microcontroller
- Software: SolidWorks, Fusion360, ROS, Drake, Github, OpenCV, Eagles, AdvantEdge
- Languages: Mandarin (Native), English (Advanced).

EXPERIENCE

Massachusetts Institute of Technology

Topic: Autonomous Racing May 2022 - Present

- Led a team of 5, implemented Particle Filter, object dectection, path finding algorithms and pure pursuit controller for MIT Racecar platform.
- Won the 3rd place in 20 teams at final competition of Robotics, Science and System 2022 (MIT flagship robotics course).
- Improved Kalman Filter for MIT Driverless Team, optimized localization performance.

Biomimetic Robotics Laboratory, Massachusetts Institute of Technology

Topic: Trajectory Optimization for MIT Humanoid Robot Jan 2022 – Aug 2022

Advisor: Sangbae Kim, Professor of Mechanical Engineering

- Derived dynamic for reduced humanoid model of 7-link.
- Used direct collocation method formulate the optimization problem for humanoid robot.
- Solved for optimal trajectory using interior point method and simulated humanoid running in MATLAB.
- Designed a finite horizon LQR to track the desired running trajectory.
- Verified hypothesis that torques on feet contribute to flight phase pose control.

Department of Mechanical Engineering, Tsinghua University

Topic: Sim-to-Real Transfer for Gelsight Tactile Sensors Jun 2021 - Aug 2021

Advisor: Jing Xu, Associate Professor of Mechanical Engineering

- Investigated the basic principles of Gelsight tactile sensors and analyzed the modeling gap between real sensor images and simulation.
- Modified Cycle Generative Adversarial Network and applied it to Sim-to-Real tasks.
- Designed experiments to verify the proposed method on both a public dataset and a self-collected dataset.
- Increased the classification rate by 15.92% over the current method.
- Used bi-direction characteristic of the network to conduct real-to-sim depth reconstruction.

Department of Mechanical Engineering, Southern University of Science and Technology

Topic: Improved Mobility of Rover with Body Rotating Mechanism Oct 2020 - Jun 2021

Advisor: Zhenzhong Jia, Assistant Professor of Mechanical Engineering

- Solved the problem of the current rover easily being stuck in granular terrain.
- Hypothesized that balancing the load on each wheel can improve mobility.
- Designed a rover with a rotational mechanism whose center of mass is movable when rover is traversing on different terrains.
  - With force feedbacks on wheels, the mechanism works like a gimbal and balances wheel loads in time.
  - The rover can climb a slope deeper than 20°. The slip ratio during climbing and the slip angle during slope traversing are significantly smaller than those without enabling the mechanism.

PUBLICATIONS

- W. Chen, Y. Xu, **Z. Chen**, P. Zeng, R. Dang, R. Chen, and J. Xu*, "Bi-Directional Sim-to-Real Transfer for GelSight Tactile Sensors with CycleGAN," IEEE Robotics and Automation Letters (RA-L) (W. Chen, Y. Xu, and Z. Chen contributed equally to this work)
- S. Lv, Y. Zhao, **Z. Chen**, C. Gao, L. Hu, and Z. Jia*, "Improved Rover Mobility Over Loose Deformable Slopes through Active Control of Body-Rotating Mechanism," The IEEE 27th International Conference on Mechatronics and Machine Vision in Practice (M2VIP 2021)

ACTIVITIES

Graduate Teaching Assitant Sep 2022 - Present

- Assit more than 40 students in BME4739/6479 Medical Robotics.
- Prepare supplement material and hold office hour to improve stuents' understanding on course content, homework and program projects.

President of College Peer Mentors June 2020 - June 2021

- Led the team and held several popular activities in the college including College Drama Night (attracting an audience of 200 plus).
- Reorganized the team structure and operation rules, which motivated members to interact with freshmen more.
- Provided one-on-one consultation and necessary companionship for 36 freshmen.

Innovation and Entrepreneurship Department Officer of College Sep 2018 - June 2019

- Developed STEAM courses for primary students and delivered lectures in a local primary school to share the charm of technology.

Member of SUSTech Volunteers' Association Sep 2018 - June 2019

- Organized the volunteer training for the whole university and prize events.
- Had 40 plus hours of volunteer service.