Chuye Zhang

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EDUCATION BACKGROUND

University of Pennsylvania   Jan 2024-Jul 2024
International Guest Student | GPA: **4.0/4.0**

Southern University of Science and Technology (SUSTech)   Sep 2021-Present
Bachelor of Engineering in ***Robotics Engineering*** | GPA: **3.87/4.0**, Rank: **1/67**

PUBLICATIONS

- **Chuye Zhang*,** Yifei Simon Shao***,** Harshil Parekh, Junyao Shi, Pratik Chaudhari, Vijay Kumar, Nadia Figueroa, Don't Yell at Your Robot: Physical Correction as the Collaborative Interface for Language Model Powered Robots, Generative Modeling meets HRI - RSS'24 Workshop,
- Yenan Chen#, **Chuye Zhang**#, Pengxi Gu#, Jianuo Qiu, Jiayi Yin, Nuofan Qiu, Guojing Huang, Bangchao Huang, Zishang Zhang, Hui Deng, Wei Zhang, Fang Wan*, and Chaoyang Song* (2024). "Evolutionary Morphology Towards Overconstrained Locomotion via Large-Scale, Multi-Terrain Deep Reinforcement Learning." *IEEE/IFToMM International Conference on Reconfigurable Mechanisms and Robots (ReMAR2024)*. Chicago, USA, 24-27 June 2024.
- Tingxiang Fan, Bowen Shen, Yinqiang Zhang, **Chuye Zhang**, Lei Yang, Hua Chen, Wei Zhang, Jia Pan, S^2MAT: Simultaneous and Self-Reinforced Mapping and Tracking in Dynamic Urban Scenariosorcing Framework for Simultaneous Mapping and Tracking in Unbounded Urban Environments. *(First Revision Submitted to Journal of Field Robotics on November 7, 2024)*

PROFESSIONAL SKILLS

Programming Languages: Python, Java, MATLAB, C/C++
Software & Tools: Robot Operating System (ROS)**,** Linux (Ubuntu), SolidWorks, LaTeX, Fusion 360**,** CapCut, Adobe Premiere
Robotics: Machine Perception, Machine Learning, Reinforcement Learning, Large Language Model Powered Robot, Classic Control, Mobile Robot, Mechanical Design, Mechatronics, Compass and IMU

RESEARCH EXPERIENCE

Don't Yell at Your Robot: Physical Correction as the Collaborative Interface for Language Model Powered Robots   *https://sites.google.com/sas.upenn.edu/dontyellatyourrobot/home*
Core Member, Co-first Author | *Advisor: Nadia Figueroa (UPenn Grasp Lab)*   Apr 2024-July 2024

- Developed and optimized prompts and ROS nodes to enable real-time interaction between a large language model (LLM) and a physical robotic system.
- Designed and conducted a proof-of-concept experiment to statistically evaluate the success rate of proper decisions made by the LLM.
- Designed a friction-based self-locking mounting mechanism, enabling effective grasping.
- Deployed the algorithm on a 7DOF KUKA LBR iiwa 14 robotic arm
- Recorded and organized experimental data, visualized results, and created publication-quality illustrations.
- Prepared slides, a project website, and an introductory video for the poster session at the Generative Modeling meets HRI - RSS'24 Workshop.

Evolutionary Morphology Towards Overconstrained Locomotion via Large-Scale, Multi-Terrain Deep Reinforcement Learning *https://ancorasir.github.io/BennettWheelLegRL/* Apr 2023-Feb 2024
Core Member, Co-first Author | Advisor: Chaoyang Song (SUSTech Biontic Design & Learning lab)
- Conducted market research, designed and prototyped an Earthquake sensor retrieving robot using Fusion 360, winning first prize in a national mechanical design competition.
- Established a simulation environment in Isaac Gym to replicate reinforcement learning for a quadruped robot.
- Addressed the over-constrained leg simulation issue by identifying equivalent open-loop mechanisms and simplifying the design for the competition, importing the URDF file in the simulation environment.
- Trained locomotion policies with PPO, refined reward functions, and optimized hyperparameters.
- Analyzed simulation data to calculate locomotion energy efficiency, visualized results, and conducted comparative analysis.
- Prepared slides and a project website and delivered an online presentation at the ReMAR 2024 conference held in Chicago.

Simultaneous and Self-Reinforced Mapping and Tracking in Dynamic Urban Scenariosorcing Framework for Simultaneous Mapping and Tracking in Unbounded Urban Environments
https://sites.google.com/view/smat-nav   Jul 2022-May 2023
Core Member, Co-Author | Advisor: Professor Wei Zhang, SUSTech CLEAR Lab
- Developed a Kalman filter-based approach to integrate SLAM odometry (biased) with compass data (unbiased but noisy), achieving accurate estimation of the robot's yaw (heading) angle.
- Improved yaw angle estimation by fusing GPS data with SLAM odometry through an optimization-based approach.
- Conducted extensive real-world hardware tests to validate the algorithm's performance across diverse scenarios.
- Planned experimental routes using the Baidu Maps API.
- Deployed ROS for multi-robot communication, enabling real-time visualization and monitoring of experimental data.
- Recorded and organized experimental videos and datasets, edited videos, and created publication-quality illustrations using Mapbox, Rviz Satellite, CapCut, and Premiere Pro.

EXTRACURRICULAR ACTIVITIES

Class Representative of the 2021 Robotics Engineering Class	Sep 2022-Now
Graduation Ceremony Volunteer, Department of Mechanical and Energy Engineering	Jun 2022
Freshman Orientation Volunteer, Shuli College, SUSTech	Sep 2021
Member of the College Basketball Team, SUSTech	2021-2022

HONORS AND AWARDS

Outstanding Student Scholarship for the 2022-2023 Academic Year, SUSTech	2023
Outstanding Student Scholarship for the 2021-2022 Academic Year, SUSTech	2022
First Prize in Mechanical Product Digital Design Competition	2023
Global Engineer Talent Research and Innovation Summer School	2023
Shuli College Enthusiastic Participation Award Scholarship	2022
Advanced Individual in Alma Mater Revisiting Program	2022