Yinghan Sun

1088 Xueyuan Avenue, Shenzhen 518055, P.R. China
(+86) 17724601335 | sunyh2021@mail.sustech.edu.cn | https://yinghansun.github.io

EDUCATION

Southern University of Science and Technology — Shenzhen, Guangdong, China
Master of Engineering in Robotics — *Sep. 2021 - Present*
Topic in Robot Motion Planning and Perception — Advisors: Wei Zhang, Hua Chen

Southern University of Science and Technology — Shenzhen, Guangdong, China
Bachelor of Engineering in Robotics Engineering — *Sep. 2017 - June 2021*
Coursework in Robotics, Control and Machine Learning — Advisors: Wei Zhang, Hua Chen

The Ohio State University — Columbus, OH, USA
Undergraduate Visiting Student — *July 2019 - Aug. 2019*
Topic in Simulation on Quadruped Locomotion — Advisor: Ayonga Hereid

TECHNICAL SKILLS

Programming	Python, C/C++, MATLAB, Java
Softwares & Tools	Numpy, Eigen, Matplotlib, OpenCV, Open3D, PCL, PyTorch, scikit-learn, Pinocchio, Mujoco, IsaacGym, PyBullet
Others	ROS, Arduino, Markdown, LaTeX

PUBLICATIONS

- A co-authored paper submitted to CVPR, 2024. (This paper is currently undergoing the double-blind peer-review process for the CVPR 2024 conference. Due to the conference's adoption of a double-blind review system, I am unable to provide specific details regarding the paper's title and authors at this time. If necessary, I am prepared to provide a screenshot of the review status as evidence of the paper's submission.)
- **Yinghan Sun**, Linfang Zheng, Hua Chen, Wei Zhang. Multi-Resolution Planar Region Extraction for Uneven Terrains. *IEEE International Conference on Robotics and Automation (ICRA)*, 2024.
- Linfang Zheng, Chen Wang, **Yinghan Sun**, Esha Dasgupta, Hua Chen, Aleš Leonardis, Wei Zhang, Hyung Jin Chang. HS-Pose: Hybrid Scope Feature Extraction for Category-level Object Pose Estimation. *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2023.

SELECTED PROJECTS

Robust Quadruped Locomotion on Uneven Terrains — *Mar. 2023 - Present*
Research Project — *Advisors: Wei Zhang, Hua Chen*

- Utilized and adapted a teacher-student privileged learning framework to train quadruped robot locomotion on various uneven terrains using solely proprioceptive observations.
- Employed a sequence of historical proprioceptive observations to estimate terrain information and privileged states.
- Applied the trained policy directly on the real robot using domain randomization techniques.

Plane Segmentation from Unordered Point Cloud — *Aug. 2022 - Mar. 2023*
Research Project — *Advisors: Wei Zhang, Hua Chen*

- Proposed a multi-resolution plane segmentation method that achieves a balance between accuracy and efficiency to meet the requirement of practical applicability. The proposed method significantly outperforms the RANSAC-based approach, achieving nearly 10 times the processing speed. Moreover, it exhibits a notable reduction of missing points across diverse noise levels compared to region-growing-based methods.
- Proposed a local geometric sensitive pointwise classification module, resulting in a reduction of the average error on the normal vectors of the extracted planes and displaying remarkable noise robustness.
- Introduced an updating scheme for the covariance matrix estimation that incrementally incorporates new data points during coplanar region merging. This strategy eliminates redundant matrix multiplication, enhancing the overall effectiveness of the proposed method.

Kinematics-Aware Bipedal Robot Switch Light *Aug. 2020*

2020'WAIC · Humanoid Service Robot Simulation Competition

- Engineered a bipedal robot capable of switching on a light from its initial state.
- Applied inverse kinematics to determine feasible joint positions, enabling the end-effector to reach the switch's position.
- Utilized MoveIt! for joint space trajectory planning to execute the desired action.

A Gecko-inspired Soft-and-rigid Climbing Robot *Apr. 2020 - June 2020*

Course Project *Advisor: Hongqiang Wang*

- Designed a climbing robot capable of navigating slopes with a maximum inclination of 75 degrees.
- Composed of three integral components: head, waist, and tail, each equipped with electromagnetic magnets positioned at the top of their respective legs. The middle section, crafted from silicone gel, demonstrates flexibility in response to external forces. The robot's tail houses a stepper motor within a square enclosure.
- Installed a stepper motor in the robot's tail, controlled by an upper computer to generate variable torque. This tension is then transmitted through a fine wire to the robot's head, inducing bending in the soft middle section in response to stress.

TEACHING

Southern University of Science and Technology Shenzhen, Guangdong, China

Teaching Assistant *Sep. 2021 - Jan. 2022*

ME424 Modern Control and Estimation

Southern University of Science and Technology Shenzhen, Guangdong, China

Lecturer *Dec. 2018 - Jan. 2019*

Calculus Tutorial for Final Exam

ACADEMIC AWARDS & HONORS

2023	Third Prize | 2023 World Robot Contest Championships – Beijing
2022	Excellent Teaching Assistant | SUSTech
2020	Second Prize | 2020WAIC · Humanoid Service Robot Simulation Competition
2020	Second Prize | SUSTech Scholarship Award
2018	Second Prize | SUSTech Scholarship Award

DIVERSITY & LEADERSHIPS

Zhiren Chinese Traditional Orchestra, SUSTech *Sep. 2017 - June. 2023*

- Served as the leader of the Orchestra from June 2018 to June 2020, overseeing both its artistic qualities and operational aspects.
- Recognized with the Excellent Artistic Backbone Award from SUSTech Arts Center (Top 10 out of 31 candidates).
- Orchestrated over 10 concerts and actively participated in over 20 concerts and cultural activities.
- Awarded the Gold Prize in the 2021 International Music and Art Festival, IACDA Fall Series in Shenzhen.
- Achieved the Best Music Award in The First Wu-Si Original Song Contest at SUSTech.

Student Counselor for Freshmen, Zhicheng College, SUSTech *Aug. 2018 - June 2019*

- Provided guidance to approximately 150 freshman students through a series of mini-lectures and activities.
- Facilitated the establishment of a class committee within the freshman class, organized orientation activities, and addressed daily challenges.
- Recognized with the Outstanding Upperclassman Award in Zhicheng College (Top 3 out of 18 student counselors).
- Recognized with the Outstanding Student Leadership Award in Zhicheng College.

Volunteer Experience, Shenzhen *Sep. 2017 - Present*

- Led the volunteer service team within the School of Engineering at SUSTech during March 2021 to March 2022, overseeing and coordinating various projects.
- Contributed a total of 31.5 hours of volunteer service.
- Awarded the Third Prize for Outstanding Volunteers at SUSTech.