Yinghan Sun

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EDUCATION

Southern University of Science and Technology Shenzhen, Guangdong, China
Master of Science in Robotics *Sep. 2021 - Present*
Topic in Perceptive Locomotion and Reinforcement Learning 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, HTML/CSS
Softwares & Tools	Numpy, Eigen, Matplotlib, OpenCV, Open3D, PCL, PyTorch, scikit-learn, Pinocchio, Mujoco, IsaacGym, PyBullet
Others	ROS, Arduino, Markdown, LaTeX

PUBLICATIONS

- **Yinghan Sun**, Linfang Zheng, Hua Chen, Wei Zhang. Plane Segmentation on Uneven Terrains by Divide-and-Conquer. *under review*, 2023.

- Linfang Zheng, Chen Wang, **Yinghan Sun**, Esha Dasgupta, Hua Chen, Ales Leonardis, Wei Zhang, Hyung Jin Chang. HS-Pose: Hybrid Scope Feature Extraction for Category-level Object Pose Estimation. *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2023.

SELECTED PROJECTS

Locomotion Through Optimal Control and Reinforcement Learning *Mar. 2023 - Present*
Lab Project *Advisors: Wei Zhang, Hua Chen*

- Implemented the MIT's solution (model predictive control with single rigid body dynamics model) using Python.
- Showed that the PD gains and MPC weights could be adjust dynamically by leveraging reinforcement learning.

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

- Proposed a novel approach that efficiently segments planes from an unordered point cloud using an divide-and-conquer strategy.
- Used an octree to organize the point cloud and leveraged a local geometric sensitive pointwise classification procedure to assist the plane extraction in each octree's node.
- The experiments show that the proposed method is capable of segmenting planes in uneven terrains while running in real-time.

Kinematics-Aware Bipedal Robot Switch Light *Aug. 2020*
2020'WAIC · Humanoid Service Robot Simulation Competition

- Made a bipedal robot switch light from the initial state.

- Used inverse kinematics to solve for feasible joint positions to make the end-effector achieve the switch's position.
- Used MoveIt! to perform joint space trajectory planning.

A Gecko-inspired Soft-and-rigid Climbing Robot   *Apr. 2020 - June 2020*
Course Project   *Advisor: Hongqiang Wang*
- We designed a climbing robot with a maximum slope inclination of 75 degrees.
- The robot is composed of three parts: head, waist, and tail, with electromagnetic magnets installed at the top of each leg. The middle part is made of silicone gel and can bend under external force. The tail of the robot has a stepper motor installed in a square box.
- The tail of the robot has a stepper motor installed in a square box. The motor can output changing torque under the control of the upper computer. The tension is transmitted to the robot's head through a fine wire, causing the middle soft part to bend under 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
Instructor   *Dec. 2018 - Jan. 2019*
Calculus Tutorial for Final Exam

AWARDS & HONORS

2022	Excellent Teaching Assistant | SUSTech
2021	Gold Prize | 2021 International Music and Art Festival, IACDA Fall Series in Shenzhen
2020	Second Prize | 2020WAIC · Humanoid Service Robot Simulation Competition
2020	Second Prize | SUSTech Scholarship Award
2020	Best Music Award | The First Wu-Si Original Song Contest in SUSTech
2020	Outstanding Student Leadership Award | Academic Award of Zhicheng college
2019	Excellent Artistic Backbone | SUSTech Arts Center
2019	Outstanding Upperclassman | Academic Award of Zhicheng college
2018	Second Prize | SUSTech Scholarship Award
2018	Third Prize | Outstanding Volunteers in SUSTech

DIVERSITY & LEADERSHIPS

Zhiren Chinese Traditional Orchestra   *Sep. 2017 - June. 2023*
- Orchestra Leader during June 2018 to June 2020.
- Organized over 10 concerts and participated in over 20 concerts and activities.

Project Leader of Volunteer Service Team of School of Engineering   *Mar. 2021 - Mar.2022*

Senior Counselor for Freshmen of SUSTech   *Aug. 2018 - June 2019*
- Advised around 150 freshman students via a series of mini-lectures and activities
- Established collaborative and caring community culture, solved daily problems and arranged social activities

Volunteer of the Chinese Congress on Artificial Intelligence (CCAI)   *July 2018*