

Haoming Li

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Education	University of Pennsylvania , Philadelphia, PA <i>Master of Science</i> , Electrical Engineering Advisor: Dr. Nadia Figueroa Thesis: Towards Generalizable Robust Safe Robotic Systems via Lipschitz Regularization May 2024 GPA: 3.71/4.00
	China University of Geosciences , Beijing <i>Bachelor of Engineering</i> , Electrical and Information Engineering June 2021 GPA: 89.74/100
Publication	Y. Liu, H. Li , M. Huang, D. Chen, and B. Zhao, "Ice Crevasse Detection with Ground Penetrating Radar using Faster R-CNN," 2020 15th IEEE International Conference on Signal Processing (ICSP), 2020, pp. 596-599. (Oral)
Research Experience	GRASP Lab , University of Pennsylvania <i>Research Assistant (Advisor: Dr. Kostas Daniilidis)</i> June. 2024 – Present <ul style="list-style-type: none">Proposed a diffusion-based 3D shape completion method for robotic grasping.Introduced a latent diffusion model that takes partial depth images from one single view as input and generates multimodal high-fidelity complete shapes which enlarge grasping hypothesis for generating more accurate grasping poses.Applied our method to a Kinova Gen3 robot arm both in the Gazebo simulation environment and in the real world.
	GRASP Lab , University of Pennsylvania <i>Research Assistant (Advisor: Dr. Nadia Figueroa)</i> May. 2023 – May. 2024 <ul style="list-style-type: none">Proposed a MLP-based continuous learning system that maps a stream of depth images to signed distance functions for real-time collision avoidance.Utilized the learned signed distance fields to construct control barrier functions to ensure the safety of robots.Implemented experiments in the Gazebo environment demonstrating our model's capability of reactive collision avoidance.
	GRASP Lab , University of Pennsylvania <i>Research Assistant (Advisor: Dr. Nadia Figueroa)</i> Oct. 2023 – May. 2024 <ul style="list-style-type: none">Proposed a semantic-informed neural SLAM system to enhance the generalization capabilities and provide more precise and detailed scene reconstructions and robust camera tracking.Explored the benefits of semantic information to refine both mapping and tracking processes with the Replica and NeuralRGBD datasets.
	GRASP Lab , University of Pennsylvania <i>Research Assistant (Dr. George Pappas's Group)</i> Dec. 2022 – Feb. 2023 <ul style="list-style-type: none">Proposed a weight normalization and a Lipschitz regularization on generative models for better adversarial robustness, 3D shape interpolation and reconstruction.
	Institute of Electronics, Chinese Academy of Sciences <i>Research Assistant (Advisor: Dr. Keming Chen)</i> Oct. 2020 – July. 2022 <ul style="list-style-type: none">Presented a divided spatial and temporal context modeling network to tackle remote sensing image change detection (segmentation) tasks.Introduced the Transformer into modeling the global context enabling the network to produce more accurate segmentation masks for temporal remote sensing images.

University of Chinese Academy of Sciences

Research Assistant (Advisor: Dr. Yan Liu)

Feb. 2019 – Sep. 2020

- Proposed an ice crevasse detection method based on Faster R-CNN achieving an accuracy above 95% for safe robotic navigation.

Awards

Second Prize in the 1st Undergraduate Physics Academic Competition of Beijing.

First Prize in the 10th Innovation Creativity Entrepreneurship.

Third Prize in the 14th Undergraduate Physics Experiment Competition.

School of Information Engineering Award

Skills

Programming Languages: Python, C++, C, MATLAB, SQL

Libraries & Tools: ROS, Gazebo, CVXPY, PyTorch, Pandas, L^AT_EX.