Nan Li

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Educational Background

Georgia Institute of Technology Atlanta, United States
Mechanical Engineering Aug.2024-Jun.2026 (expected)
Cumulative GPA: **4.0/4.0**
Core Courses: Linear Control, Adv Control Design Implement, Intro to Robotics Research, Machine Learning, Computer Vision

Sichuan University Chengdu, China
Major in Mechanical Engineering Sep.2020-Jun.2024
Cumulative GPA: **3.93/4.0** | Rank: **3/81** | TOEFL: **103**
Core Courses: Dynamics Systems, Automatic Controls, Mechanical Design, Linear Algebra, Probability

Publications and Workshops

Publications

[1] **Nan Li**, Jiming Ren, Haris Miller, Samuel Coogan, Karen M. Feigh, and Ye Zhao **"Adaptive Obstacle-Aware Task Assignment and Planning for Heterogeneous Robot Teaming"**, Submitted to *IEEE Transactions on Automation Science and Engineering (T-ASE)*

[2] Xinyi Liu, **Nan Li***(Co-First Author), Yifan Wang, Yuanye Dong, Beining Fu, and Qi Lu **"Singularity Free Dynamic Control Allocation for a Tilt-rotor Multirotor Unmanned Aerial Vehicles"**, Accepted by *IEEE CASE 2023*

[3] Fashu Xu, Wenjun Huang, Hao He, **Nan Li**, Kang Li, and Hongchen He, **"A Segmented Dynamic Movement Primitives-Based Gait Assistive Strategy for Soft Ankle Exosuit"**, Accepted by *ICIRA 2023*

Workshops

[1] **Nan Li**, Haris Miller, Jiming Ren, Alagappan Swaminathan, Samuel Coogan, Karen M. Feigh, and Ye Zhao, **"Resilient Task Allocation and Planning Framework for Heterogeneous Robot Teams"**, ICRA 2025 Workshop

Research Experience

Multi-agent System Task Allocation and Path Planning
Supervised by Dr. Ye Zhao | Georgia Institute of Technology Dec. 2024–Present
Core Contents:
- Propose an adaptive Halton sequence map, where sampling density automatically adjusts according to obstacle distribution.
- Develop a hierarchical heterogeneous allocation framework based on a cluster–auction–task selection structure, which generalizes to any number of task types and reduces allocation complexity while maintaining capacity and capability constraints.
- Present a fully integrated online pipeline with LLMguided interaction for multi-robot system. It interprets natural language inputs and supports real-time replanning in response to human instructions.
- Validate the OATH framework in various case studies, showing substantial improvements in task assignment quality, scalability, adaptability to dynamic changes, and overall execution performance compared to state-of-theart MATP baselines.

Singularity Free Dynamic Control Allocation for a Tilt-rotor Multirotor Unmanned Aerial Vehicles
Supervised by Prof. Qi Lu | Sichuan University Jan.2022-Mar.2023
Core Contents:
- Built the barrier function to convert the inequality constraint into an equation constraint to circumvent the singularity problem;
- Introduced the equation constraint via Lagrange's equation and converted this problem to an optimization problem;
- Proved the stability of the adaptive algorithm by using Barbara's Lemma;
- Performed the trajectory simulation on the six-rotor tilt-rotor UAV avoidance singularity problem.

A Segmented Dynamic Movement Primitives-Based Gait Assistive Strategy for Soft Ankle Exosuit
Huaxi Medical Robot Research Institute | Sichuan University Mar.2023-Jun.2023
Core Contents:
- Learned about the different gait planning algorithms and analyzed the advantages and disadvantages of each one;
- Grasped the DMP gait planning approach and applied it to the soft exoskeleton design;
- Made the DMP gait planning adaptable to different users by using reinforcement learning and optimization algorithms.

Design and Integration of Automatic Reagent Preparation Machine
Huaxi Medical Robot Research Institute (Leader of this project) | Sichuan University Aug.2023-Apr.2024
Core Contents:

- Design specific components of the reagent machine;
- Use DH parameters to model the robot arm, enabling precise calculation of its position based on input joint angles;
- Learn the use of QT Creator to develop a user-friendly human-computer interaction interface for controlling the robot arm;

Honors & Awards

Academic Star (Top 1%) | Sichuan University 2020
First Prize of Academic Scholarship (Top 3%) | Sichuan University 2020
Merit Student (Top 5%) | Sichuan University 2020, 2021, 2022
Dean's List (Top 5%) | Sichuan University 2021, 2022
Second Prize of Academic Scholarship | Sichuan University 2022

Extracurricular Activities

Graduate Assistant, Student Assistant | Georgia Institute of Technology 2025 Spring-present
Senior Project Leader | Sichuan University - Pittsburgh Institute 2023-2024
Teaching Assistant | Course of Analytical Geometry and Calculus 2022 Fall, 2023 Spring
Teaching Assistant | Course of Mechanical Design 1 2023 Fall, 2024 Spring
Teaching Assistant | Course of Dynamic Systems 2023 Fall, 2024 Spring
Peer Advisor | Sichuan University - Pittsburgh Institute 2021-2022
Leader of Sichuan University - Pittsburgh Institute Debate Team 2021-2022

Professional Service

Journal Reviewer
IEEE Transactions on Robotics (T-RO) 2025
IEEE/ASME Transactions on Mechatronics (T-Mech) 2025

Volunteer
IEEE International Conference on Robotics and Automation (ICRA) 2025

Professional Skills

Programming Language: Python, MATLAB, C
Tools: ROS2, Linux, Catia, SolidWorks, LaTeX