Jiahui Yang

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EDUCATIONS

Carnegie Mellon University (CMU), Pittsburgh, USA *Aug 2023 - Present*
M.Sc. in Robotics, School of Computer Science GPA 4.17/4.0
Selected Courses: Visual Learning and Recognition (A+), Computer Vision (A+), Robot Learning (A)

Massachusetts Institute of Technology (MIT), Cambridge, USA *Aug 2021 - Jun 2022*
Exchange Student, School of Engineering GPA 5.0/5.0
Selected Courses: Machine Learning (A), Introduction to Robotics (A),
Electronics for Mechanical Systems (A), Power Electronics (A), Product Engineering Process (A)

Southern University of Science and Technology (SUSTech), Shenzhen, China *Aug 2019 - Jun 2023*
B.Eng. in Robotics Engineering (Summa Cum Laude), College of Engineering GPA: 3.94/4.0 Rank: 1/66
Selected Courses: Modern Control and Estimation (A+), Data Structure and Algorithm Analysis (A+)

PUBLICATIONS

* denotes equal contribution

Neural MP: A Generalist Neural Motion Planner
Murtaza Dalal*, **Jiahui Yang***, Russell Mendonca, Youssef Khaky, Ruslan Salakhutdinov, Deepak Pathak
arXiv 2024 [Website] [PDF]

Bimanual Dexterity for Complex Tasks
Kenneth Shaw*, Yulong Li*, **Jiahui Yang,** Mohan Kumar Srirama, Ray Liu, Haoyu Xiong,
Russell Mendonca†, Deepak Pathak†
Conference on Robot Learning (CoRL) 2024 [Website] [PDF]

A lightweight high-voltage boost circuit for soft-actuated micro-aerial-robots
Zhijian Ren, **Jiahui Yang,** Suhan Kim, Yi-Hsuan Hsiao, Jeffrey Lang, Yufeng Chen
IEEE International Conference on Robotics and Automation (ICRA) 2023 [PDF]

Coordinated Defense Allocation in Reach-Avoid Scenarios with Efficient Online Optimization
Junwei Liu, Zikai Ouyang, **Jiahui Yang,** Hua Chen, Haibo Lu, Wei Zhang
arXiv 2023 [PDF]

Parallel connecting rod mode switching parallel clamp coupling self-adaptive robot finger device
Jiahui Yang, Wenzeng Zhang
China Invention Patent CN113954111B [PDF]

RESEARCH EXPERIENCES

Research Assistant at Learning for Embodied Action and Perception Lab (LEAP), CMU **Pittsburgh, USA**
Advisor: Prof. Deepak Pathak *Oct 2023 - Present*

➢ **Neural MP: A Generalist Neural Motion Planner**

- Developed a pipeline of training and deploying generalist neural motion planners, which outperforms SOTA sampling, optimization and learning based planning methods by 23%, 17% and 79%. The policy achieved 95.83% success rate on evaluation tasks and could generalize to a broad set of out-of-distribution real world environments. In submission to ICRA 2025 (project co-lead)
- Built diverse scenes in simulation and collect expert data from sampling based planner, then distilled it into a reactive generalist policy. We combined this with a lightweight optimization procedure at test time to ensure fast, safe, and reliable deployment in the real world.

➢ **Bimanual Dexterity for Complex Tasks**

- Developed an extremely dexterous, low-cost, low-latency and portable bimanual dexterous teleoperation

system which relies on motion capture gloves and teacher arms. Accepted to CoRL 2024.
- Led the effort of the mechanical design of the teacher arm system and setting up apple vision pro as baseline comparison. Assisted data collection and model training.

Research Assistant at Soft and Micro Robotics Laboratory (SMRL), MIT **Cambridge, USA**
Advisor: Prof. Kevin Chen *Jan 2022 - Jun 2022*

➢ **A lightweight high-voltage boost circuit for soft-actuated micro aerial robots**
- Developed a power circuit to convert 7.7V DC input into a 600V and 400Hz output for driving a 120mg DEA (soft dielectric elastomer actuator). Accepted to ICRA 2023.
- Designed circuit topology and control algorithms. Simulated circuit performance and optimized control gains. Fabricated and tested PCB layout.

Summer Intern at Zhang lab, Tsinghua University **Beijing, China**
Advisor: Prof. Wenzeng Zhang *Jun 2021 - Aug 2021*

➢ **Dual-Mode Underactuated Robot Gripper Design**
- Proposed a dual-mode robot gripper that can switch between parallel pinching mode and coupled grasping mode, enabled it to handle diverse manipulation scenarios.
- Also incorporated an underactuated damping joint in the system so the gripper can automatically adapt to the object geometry to achieve more powerful grasps. Published as China invention patent.

Research Assistant at Control & Learning for Robotics and Autonomy Lab (CLEAR) **Shenzhen, China**
Advisor: Prof. Wei Zhang *Aug 2020 - May 2023*

➢ **Wheel-Legged Hybrid Robot Locomotion (Bachelor's Thesis)**
- Developed control framework for the wheel-legged quadrupedal robot to maneuver in wheel-foot mode and point-foot mode to tackle different locomotion environments.
- Built low-level mechatronic framework and whole body MPC controller. Enabled dynamic mode switch while the robot is moving.

➢ **Coordinated Defense Allocation in Reach-Avoid Scenarios with Efficient Online Optimization**
- Investigated a dual-layer online optimization strategy for defender robots operating in multiplayer reach-avoid games within general convex environments.
- Assisted in convex optimization analyses and built simulation platform to validate theoretical results.

HONORS AND AWARDS

Top 10 Summa Cum Laude Graduates, College of Engineering, SUSTech (Top 1%) *Jun 2023*
Best student of the year in Zhicheng College, SUSTech (Top 0.5%) *Sep 2022*
Most Valuable Engineer Award in 2.12 course project competition, MIT *May 2022*
MIT & SUSTech Special Student Scholarship, MIT & SUSTech ($ 72,500, Top 0.1%) *Sep 2021*
Finalist Prize in ICM competition (Top 1% among 26,000 teams) *Jan 2021*
First Class Merit Scholarship, SUSTech (Top 5%) *Sep 2020 & Sep 2021*
Excellence Freshman Scholarship, SUSTech *Sep 2019*

SKILLS

Programming: Python, C++, C, JAVA, HTML
Tools: ROS, Pytorch, Matlab, PyBullet, IsaacGym, IsaacSim, MuJoCo, Git, LATEX
Hardware: Solidworks, Arduino, Altium Designer, Laser-cutting, 3D Printing, Soldering