(412) 576-9236
Philadelphia, PA
zjh@seas.upenn.edu

Tom Z. Jiahao

Website: jiahaoz.com
LinkedIn: jiahaozhang

My interests broadly lie in Robotics, Dynamical Systems, Scientific Machine Learning, Swarm Robotics, Deep Learning.

Education

University of Pennsylvania Advisors: Prof. M. Ani Hsieh, Prof. Vijay Kumar — Expected May 2024
Ph.D. in Computer and Information Science

Cornell University GPA: 3.75 Advisors: Prof. Hadas Kress-Gazit, Prof. Amit Lal — Dec 2018
B.Sc. in Computer Science
B.Sc. in Mechanical Engineering

Selected Publications

[1] Y. Wu*, **T. Z. Jiahao***, J. Wang, P. A. Yushkevich, M. A. Hsieh, and J. C. Gee, "NODEO: A Neural Ordinary Differential Equation Based Optimization Framework for Deformable Image Registration," *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022.

[2] K. Y. Chee*, **T. Z. Jiahao***, and M. A. Hsieh, "KNODE-MPC: A Knowledge-Based Data-Driven Predictive Control Framework for Aerial Robots," in *IEEE Robotics and Automation Letters (RA-L)*, vol. 7, no. 2, pp. 2819-2826, April 2022, doi: 10.1109/LRA.2022.3144787.

[3] **T. Z. Jiahao***, L. Pan*, and M. A. Hsieh, "Learning to swarm with knowledge-based neural ordinary differential equations," *IEEE International Conference on Robotics and Automation (ICRA),* 2022.

[4] **T. Z. Jiahao**, M. A. Hsieh, and E. Forgoston, "Knowledge-based learning of nonlinear dynamics and chaos,"*Chaos: An Interdisciplinary Journal of Nonlinear Science*, vol. 31, no. 11,p. 111101, 2021.

Skills

Programming	Python, C, MATLAB, PyTorch, ROS, Linux
Design	SolidWorks, Creo, ANSYS, Adobe Illustrator, Drawing and Sketching
Communication	English, Mandarin Chinese

Work Experience

Research Assistant — **Aug. 2019 — Present**
GRASP Lab, University of Pennsylvania — *Philadelphia, PA*

- Pursuing a Ph.D. in Computer and Information Science.
- Develop deep learning algorithms which combine first-principle models for modeling dynamical systems.
- Apply aforesaid algorithms in model predictive control and swarm robotics.
- Validate algorithms using hardware platforms such as Crazyflie 2.1.

Research Assistant/Swarm Robotics — **Feb. 2019 — July 2019**
Autonomous Systems Lab, Cornell University — *Ithaca, NY*

- Develop Gazebo simulation for decentralized holonomic robot swarm in non-reactive scenarios.
- Optimize collision avoidance and deadlock mitigation for continuous controller implementation.
- Develop AirSim simulation for a swarm of 250 ground/air robot.

Hardware Engineering Intern — **June 2018 — Aug. 2018**
Uber ATG — *Pittsburgh, PA*

- Prototyped a device for applying adhesive films onto glasses.
- The prototype is fabricated using sheet metal and uses compressed air and vacuum systems for operation.

Product Engineering Intern — **Sep. 2017 — May 2018**
Rapyuta Robotics — *Chuo, Tokyo, Japan*

- Designed electronics and mechanical prototypes for product development.
- Scripted SolidWorks plug-ins in VBA to facilitate BOM generation and management.
- Designed and conducted experiments to drive key design decisions on drone design.
- Instructed and supervised Mechatronics assemblers on prototype and product assembly tasks.

Mechanical Engineering Intern — **May 2017 — Aug. 2017**
iRobot — *Bedford, MA*

- Performed testing and data analysis on robot prototype to drive key design decisions in the mopping robot product line.
- Implemented design for manufacturability (DFM) requests from contract manufacturers.
- Designed, and fabricated testing fixtures for various sub-assembly prototype testing.
- Developed rubber component prototypes, including designing and manufacturing molds.

Activities

CIS 810: Writing and Speaking in Styles, Teaching Assistant, *UPenn* — Spring 2022
Invited speaker, SIAM Conference on Applications of Dynamical Systems (DS21) Minisymposium, *Virtual* — May 2021
CIS 502: Analysis of Algorithms, Teaching Assitant, *UPenn* — Fall 2020
MAE 3780: Mechatronics Teaching, Assistant, *Cornell University* — Fall 2016
Cornell Unmanned Air Systems (CUAir), Project Lead, *Cornell University* — Fall 2014 - Fall 2018