

My interests broadly lie in Robotics, Agri-tech, and Deep Learning.

EDUCATION

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

Cornell University GPA: 3.75/4.0 Advisors: Prof. Hadas Kress-Gazit, Prof. Amit Lal Dec 2018
B.Sc. in Computer Science & Mechanical Engineering

SELECTED PUBLICATIONS

- [5] **T. Z. Jiahao***, K. Y. Chee*, and M. A. Hsieh, "Online Dynamics Learning for Predictive Control with an Application to Aerial Robots," *Conference on Robot Learning (CoRL)*, 2022.
- [4] 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.
- [3] 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.
- [2] **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.
- [1] **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

- Develop deep learning algorithms that combine first-principle models for modeling dynamical systems.
- Apply aforesaid algorithms in computer vision, model predictive control and robot teams.
- Validate algorithms using hardware platforms such as Crazyflie 2.1.

Hardware Electrical Engineer Feb. 2019 — July 2019
Geegab LLC
Ithaca, NY

- Performed analog circuit design, mechanical/electronic components prototyping, and process automation around a proprietary GHz ultrasonic transducer.
- Conducted experiments on nematodes imaging using GHz ultrasonic transducer for agricultural applications.

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

- Prototyped a device for applying adhesive films onto glasses.
- Fabricated the prototype using sheet metal and used compressed air and vacuum systems for operation.

Product Engineering Intern Sept. 2017 — May 2018
Rapyuta Robotics
Chuo, Tokyo

- 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* Summer 2021
CIS 502: Analysis of Algorithms, Teaching Assistant, *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