Daniel **Yao-Ting, Huang**

(+1) 858-220-4949 | yaotinghuang.us@gmail.com | daniel891116.github.io/ | daniel891116 | DanielHYT

Education

University of California, San Diego — *La Jolla, CA*

M.S. in Electrical and Computer Engineering(Intelligent Systems and Robotics/Control) — *Sep. 2024 - Jun. 2026(Expected)*

- Selected Courses: Statistical learning I, Sensing&Estimation Robotics, Robot Manipulation and Control

National Taiwan University(NTU) — *Taipei, Taiwan*

B.S. in Electrical Engineering — *Sep. 2019 - Aug. 2023*

- Overall GPA: 3.71/4.3(3.64/4.0) Last 60 GPA: 3.82/4.3(3.75/4.0)
- CS-related GPA: 4.0/4.3**(3.94/4.0)**
- **Teaching Assistant** for Cornerstone EECS Design and Implementation (2023 Spring) - Instructor: Prof. Ho-Lin Chen
- Selected Courses: Advanced Computer Vision, Robotics*, Machine Learning, Reinforcement Learning, Computer Vision: from recognition to geometry*, Digital Visual Effects*, Deep Learning for Computer Vision*, Algorithms, Computer Architecture.(*indicates graduate courses)

Publications

The N2D Haptic Glove: A Multi-Finger Glove for 2D Directional Force Feedback for Contact Rich Manipulation
Yao-Ting Huang, Kaitlin Calimbahin, Jake Honma, Logan Li, Omar Hernandezand, Michael Yip
(2025). 2025, under review in International Conference on Robotics and Automation(ICRA'26)

In-Hand Manipulation of Articulated Tools with Dexterous Robot Hands with Sim-to-Real Transfer
Soofiyan Atar, **Daniel Huang**, Florian Richter, Michael Yip
arXiv preprint arXiv:2509.23075 (2025). 2025, under review in International Conference on Robotics and Automation(ICRA'26)

Research Experience

Advanced Robotics and Controls Lab (ARCLab), UC San Diego — *Michael C. Yip*

Graduate research student — *Oct 2024 – Present*

- Built a teleoperation + data engine (haptic glove →Inspire Hand + Franka) to collect contact-rich demonstrations with synchronized **built-in tactile signals** (per-finger pressure/force), and actions in sim and on hardware.
- Developed **tactile preprocessing** for dexterous manipulation: calibration and temporal differencing to mitigate instability; **designed a 3D-printed fingertip cover with a compliant foam layer** to mechanically amplify small contacts and improve sensor sensitivity.
- Trained **tactile-conditioned imitation-learning** policies (LeRobot ACT/DiffusionPolicy): conditioning on Inspire Hand tactile streams improved **sample efficiency and task success rate** vs visual-only baselines on tool grasping.
- Implemented closed-loop teleop with fingertip 2D-force feedback, enabling stable contact and richer demonstrations.

Robot Learning Lab — *Shau-Hua, Sun*

Undergraduate research student — *July 2022 – Dec 2023*

- Investigated Unsupervised Reinforcement Learning (RL) problems based on SPIRL.
- Designed experiments showing that the learning efficiency will be slower by 1M steps due to the absence of certain skills.
- Implemented another feature that allows high-level agent to choose between exploration and exploitation.

Advance Control Lab — *Li-Chen, Fu*

Undergraduate research student — *Feb 2022 – June 2022*

- Assisted the experiment of the UAV (unmanned aerial vehicle) system in the indoor environment and anchor setup.
- Conducted experiments and developed a **2-D visual odometry** system to achieve indoor UAV odometry in GPS-denied environments using **optical flow** techniques.

Work Experience

Industrial Technology Research Institute(Intern) — *Hsinchu, Taiwan*

Reinforcement Learning, Autonomous system, ROS, Docker — *Aug. 2023 - present*

- Contributed to the self-driving automobile group by applying reinforcement learning for behavioral prediction of autonomous vehicles.
- Designed a virtual training environment for reinforcement learning framework based on real-world collected vehicle data.

CAVEDU(Summer Intern) — *Taipei, Taiwan*

Python, Google AIY, Program Education — *Jan. 2016 - Jun. 2017*

- Aided in the development of educational content using Google AIY Kits.
- Designed and taught a Python course for high school students, fostering STEM skills in classes averaging 6-7 students.

Awards & Competitions

2023	**3rd prize of enterprise prize & Best Application Award**, MakeNTU	*Taipei, Taiwan*
2021	**3rd prize of Interactive Technology**, NIICC	*Taipei, Taiwan*
2021	**4th prize of enterprise prize**, MakeNTU	*Taipei, Taiwan*
2020	**Special prize of enterprise prize**, Meichu Hackathon	*Shinchu, Taiwan*
2020	**Special prize of enterprise award**, MakeNTU	*Taipei, Taiwan*

Projects

Visual-Inertial SLAM

ECE 276A Sensing & Estimation for Robotics *Jan 2025 - Mar 2025*

- Developed **EKF visual-inertial SLAM** that fuses stereo and IMU data for real-time SE(3) pose and 3-D landmarks.
- Built stereo pipeline (Shi-Tomasi, optical flow, RANSAC, disparity filter) with sparse-covariance updates < 50 ms.
- Tuned process / measurement noise to cut terminal drift by ≈80 % over IMU-only baseline on three benchmark sequences.

Motion Planning Algorithms

ECE 276B Planning & Learning for Robotics *Apr 2025 - May 2025*

- Developed **Weighted A*** and KD-accelerated **Connect-RRT** planners for 3-D obstacle maps; achieved **26×** NN-query speed-up with cKDTree.
- Evaluated seven maps: Weighted A* (w = 2) ran 23 % faster than optimal A* with only 3 % longer paths.
- Produced comparative study and visualization to analyze runtime, memory, and path quality across search-based and sampling-based methods.

Deep Learning Boosts Visual Odometry

CSIE7421 Advanced Computer Vision *May 2023 - Jun 2023*

- Engineered a rapid visual odometry system integrating Meta's **'segment anything'** vision model with advanced camera optics.
- Transformed sequential imagery from varying car perspectives into precise environmental trajectories.
- Reduced average **5.7% MSE loss** of trajectory prediction by applying object's selection rules and ausal filters for trajectory smoothing.

Sushiro-Bot

CSIE5047 Robotics. [Demo] *Oct 2022 - Dec 2022*

- Developed a 7-axis robot arm for making Nigiri-sushi in **80s** and Tekka-maki in **5mins**, incorporating computer vision techniques for precision.
- Used computer vision techniques to automatically evaluate the quality of the sushi and calculate the best gripping point for soft ingredients
- Designed an algorithm that calculated the distribution of the rice and gave an suggested spot to fill the rice.

Leadership & Volunteer experience

2022 MakeNTU

Event General Coordinator *Aug 2021 - May 2022*

- Orchestrated a national competition with over 34 teams and 134 undergraduates, leading marketing and coordination efforts.
- Enhanced event visibility, contributing to a 20% increase in participant engagement.

Academic Department of NTUEE Student Association

Manager & Course lecturer *Sep 2020 - Aug 2023*

- Facilitated the usage and maintenance of machine tools for student projects.
- Managed inventory, ensuring the availability of modules and microcontrollers for over 200 students.
- Delivered lectures on the fundamental use and advanced techniques of AutoCAD and Fusion360.

Computer program consulting service

Volunteer *Sep 2020 - Jan 2021*

- Provided weekly consultation services to assist students from various departments in overcoming challenges with programming languages such as C++ and Python.

Skills

Programming	Python, C++, C#, Matlab, Javascript
Software	Isaaclab, Isaac Sim, Pytorch, OpenCV, ROS2, Git, Docker
Hardware	Franka panda arm, Unitree G1, Inspire Hand, Raspberry Pi, Jetson Nano, STM32, Arduino, Teensy, UAVs
Designing Tools	AutoCAD, Fusion360, OnShape, Unity, Blender, EasyEDA