Daniel **Yao-Ting Huang**

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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)*

- Overall GPA: 3.55/4.0
- Selected Courses: Sensing & Estimation Robotics, Planning & Learning 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 visuotactile **teleoperation & data engine** (haptic glove → Inspire Hand on Franka) that syncs per-finger pressure/force, video, and actions across sim and hardware.
- Developed a **tactile preprocessing pipeline** (calibration, temporal differencing, denoising) and a **3D-printed fingertip cover** with compliant foam to amplify small contacts.
- Implemented **closed-loop teleop** with 2-D fingertip force feedback; **2-D** achieved the lowest median force-tracking error at **50 g/500 g** and reduced NASA-TLX vs 1-D/vision-only.
- Trained **tactile-conditioned imitation-learning** (LeRobot ACT, Diffusion Policy); conditioning on Inspire tactile streams **improved sample efficiency and task success** vs vision-only baselines.

Robot Learning Lab, NTU — *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.

Advanced Control Lab, NTU — *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 - Dec. 2023*

- 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*

- Delivered Python/ML workshops; co-authored teaching kits used by **100+** K-12 students.

Selected Projects

Visual-Inertial SLAM

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

- Built stereo pipeline (Shi–Tomasi/optical-flow/RANSAC) with EKF fusion; update time **<50 ms** on recorded sequences.
- Tuned noise models and outlier rejection; achieved drift decreasing ∼**80%** vs IMU-only across **3** evaluation runs.
- Implemented robust keyframe logic to sustain tracking under fast motion.

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 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 2'** 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 causal filters for trajectory smoothing.

Magic Hand — Real-Time RGB-D Arm Pose Guided Laser Pointer.

2022 MakeNTU [Demo] *Apr 2023 - May 2023*

- Applied **YOLOv5** on RGB-D frames from **Intel RealSense** camera to localize arm joints and estimate depth for laser-pointer steering in real time.
- Optimized inference with **optical-flow** tracking to reduce per-frame compute and sustain **60+ FPS** on a laptop CPU.
- Delivered an **award-winning demo** with robust, low-latency pointing and smooth user interaction.

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.

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*

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++, C#, MATLAB, JavaScript
Robotics & Simulation	ROS 2, Isaac Lab, Isaac Sim, OpenCV, Unity
ML Framework	PyTorch
Embedded & Compute	Jetson Nano, Raspberry Pi, STM32, Arduino, Teensy
Robotic Systems	Franka Panda Arm, Unitree G1, Inspire Hand, UAVs
Design & Dev Tools	Fusion 360, Onshape, AutoCAD, Blender, EasyEDA, Git, Docker