Hung-Jui (Joe) Huang

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EDUCATION

Carnegie Mellon University (CMU) Sept. 2021 – Present
Ph.D. in Robotics *Pittsburgh, PA*

Massachusetts Institute of Technology (MIT) Sept. 2014 – June 2019
Bachelor of Science in Electrical Engineering and Computer Science, GPA: 4.8/5.0 *Cambridge, MA*

HONORS AND AWARDS

CMU Presidential Fellow, funded by Paul and James Wang/Sercomm May 2025

Best Poster Award, ICRA 2025 Dexterity in Multi-Fingered Hands Workshop May 2025

42nd International Physics Olympiad Gold Medal Winner July 2011

RESEARCH

CMU RPL Lab Sept. 2021 – Present
Ph.D. Student *Pittsburgh, PA*

- My research is about superhuman tactile sensing (actively estimating physical properties, tracking object pose during contact, and creating high-resolution 3D reconstructions) and tactile-driven dexterous manipulation. I am co-advised by Professor Michael Kaess and Professor Wenzhen Yuan.

Google DeepMind Mar. 2026 – Aug. 2026
Student Researcher (Intern) *London, UK*

- Research on multi-modal sensing for vision-language-action (VLA) models and real-world reinforcement learning in contact-rich manipulation tasks on a humanoid robot with bimanual dexterous hands. Hosted by Dr. Maria Bauza.

Google DeepMind July 2025 – Jan. 2026
Student Researcher (Intern) *London, UK*

- Research on multi-modal sensing for VLA models in contact-rich bimanual manipulation tasks. Hosted by Dr. Maria Bauza.

ISEE, Inc. Aug. 2019 – May 2021
Research Engineer *Cambridge, MA*

- Invented an efficient planning algorithm with guaranteed bounds on the probability of safety violation in probabilistic dynamic environments [2]. Deployed real-time on a 12-ton autonomous truck. Supervised by Dr. Chris Baker and Professor Ying Nian Wu.

MIT Robust Robotics Group Sept. 2018 – June 2019
Undergraduate Researcher *Cambridge, MA*

- Designed novel Graph Neural Network (GNN) method and a novel graph representation of the observation history to help the autonomous robot navigate more efficiently without a map. Supervised by Professor Gregory J Stein and Professor Nicholas Roy.

NTHU Vision Science Lab Jan. 2017 – July 2017
Research Assistant *HsinChu, Taiwan*

- Invented a new robotics visual place recognition deep learning algorithm that can be used in topological map and navigation [1]. Supervised by Professor Min Sun.

PUBLICATIONS

[11] **Hung-Jui Huang**, Amin Mirzaee, Michael Kaess, Wenzhen Yuan. *GelSLAM: A Real-Time, High-Fidelity, and Robust 3D Tactile SLAM System.* IEEE Transactions on Robotics (T-RO), Sept. 2026.

[10] Langzhe Gu, **Hung-Jui Huang***, Mohamad Qadri*, Michael Kaess, Wenzhen Yuan. *TouchAnything: Diffusion-Guided 3D Reconstruction from Sparse Robot Touches.* European Conference on Computer Vision (ECCV), June 2026.

[9] Amin Mirzaee, **Hung-Jui Huang**, Wenzhen Yuan. *GelBelt: A Vision-based Tactile Sensor for Continuous Sensing of Large Surfaces.* IEEE Robotics and Automation Letters (RA-L), Jan. 2025.

[8] **Hung-Jui Huang**, Michael Kaess, Wenzhen Yuan. *NormalFlow: Fast, Robust, and Accurate Contact-based Object 6DoF Pose Tracking with Vision-based Tactile Sensors.* IEEE Robotics and Automation Letters (RA-L), Dec. 2024.

[7] Irving Fang, Kairui Shi, Xujin He, Siqi Tan, Yifan Wang, Hanwen Zhao, **Hung-Jui Huang**, Wenzhen Yuan, Chen Feng, Jing Zhang. *FusionSense: Bridging Common Sense, Vision, and Touch for Robust Sparse-View Reconstruction.* International Conference on Robotics and Automation (ICRA), Oct. 2024.

[6] Xinyuan Luo, Shengmiao Jin, **Hung-Jui Huang**, Wenzhen Yuan. *An Intelligent Robotic System for Perceptive Pancake Batter Stirring and Precise Pouring.* International Conference on Intelligent Robots and Systems (IROS), July 2024.

[5] **Hung-Jui Huang**, Jingyi Xiang, Wenzhen Yuan. *Kitchen Artist: Precise Control of Liquid Dispensing for Gourmet Plating.* International Conference on Robotics and Automation (ICRA), Nov. 2023.

[4] Xiaofeng Guo, **Hung-Jui Huang**, Wenzhen Yuan. *Estimating Properties of Solid Particles Inside Container Using Touch Sensing.* International Conference on Intelligent Robots and Systems (IROS), Oct. 2023.

[3] **Hung-Jui Huang**, Xiaofeng Guo, Wenzhen Yuan. *Understanding Dynamic Tactile Sensing for Liquid Property Estimation.* Robotics: Science and Systems (RSS), June 2022.

[2] **Hung-Jui Huang**, Kai-Chi Huang, Michal Čáp, Yibiao Zhao, Ying Nian Wu, Chris L. Baker. *Planning on a (Risk) Budget: Safe Non-Conservative Planning in Probabilistic Dynamic Environments.* International Conference on Robotics and Automation (ICRA), May 2021.

[1] Tsun-Hsuan Wang*, **Hung-Jui Huang***, Juan-Ting Lin, Chan-Wei Hu, Kuo-Hao Zeng, Min Sun. *Omnidirectional CNN for Visual Place Recognition and Navigation.* International Conference on Robotics and Automation (ICRA), May 2018.

**Equal contribution*

WORK EXPERIENCE

Google DeepMind July 2025 – Jan. 2026, Mar. 2026 – Aug. 2026
Student Researcher (Intern), two terms *London, UK*

- Enabled multi-modal VLA models to perform contact-rich manipulation tasks on two robot systems: a bimanual robot, and a humanoid with bimanual dexterous hands
- Enabled real-world reinforcement learning on a high-dimensional robotic manipulation system

ISEE, Inc. Aug. 2019 – May 2021
Research Engineer *Cambridge, MA*

- Invented a patentable state estimation algorithm that fulfilled the high standard robustness requirement; it is now a part of our autonomous navigation system
- Implemented a fast robot mapping algorithm for robust obstacle avoidance task for the autonomous navigation system

NVIDIA, Corp. June 2018 – Aug. 2018
Deep Learning Intern *Santa Clara, CA*

- Coordinated a three-person team to implement a C++ pedestrian tracking algorithm running on a Jetson TX2 with real life demo
- Redesigned an object detection algorithm under Project Isaac; portion of it was used for GTC Japan 2018

NTHU Vision Science Lab Jan. 2017 – July 2017
Research Assistant *HsinChu, Taiwan*

- Directed the robot place recognition and navigation research team under supervision of professor Min Sun, and demonstrated the new algorithm on real world robot to Taiwanese government officials

TEACHING

CMU Computer Vision (16-720) Jan. 2024 – Present
Teaching Assistant *Pittsburgh, PA*

- Revised and led the Lucas-Kanade assignment.

MIT Robotics Science and Systems (6.141) Feb. 2018 – May 2018
Teaching Assistant *Cambridge, MA*

- Devised a final class project, which used deep learning to navigate a mobile robot indoors using RGB sensors as the only sensor input; verified its feasibility prior to assigning to students
- Restructured the lab materials and advised students on classical robotics algorithms; received a 6.5/7.0 rating from students after the class ended

SKILLS

Programming languages	Python, C++, Java, Assembly31
Software libraries	PyTorch, TensorFlow, ROS, Isaac SDK, NumPy, OpenCV, MATLAB GPOP
Software	Linux, Ansys Fluent, SolidWorks, Arduino, Onshape, OpenSCAD, Psoc5