Cheng-Lin (Stanley) Hsieh

Ph.D. Candidate, Computer Science and Engineering

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Research Focus

I study scalable robot learning and visual perception, including human motion priors, test-time steering, and perceptive whole-body control. My work combines hands-on Unitree G1 experience, co-first-author humanoid fall recovery research, and first-author NeurIPS 2026 research on optical flow estimation.

Education

University of Michigan — *Ann Arbor, MI*

Ph.D., Computer Science and Engineering — Sept. 2024 - Present
GPA: 4.0/4.0; Advisor: Stella X. Yu

M.S.E., Computer Science and Engineering — May 2026
GPA: 4.0/4.0

National Taiwan University — *Taipei, Taiwan*

B.Sc., Electrical Engineering — June 2023
GPA: 4.14/4.30

Selected Publications and Research

[1] O. Azulay*, **C.-L. Hsieh***, and S. X. Yu. **Test-Time Motion Steering for Perceptive Humanoid Fall Recovery.** CoRL 2026 Workshops: Scaling H2R & Contact-Rich Loco-Manipulation.
ICRA 2027 under review. [Project]

[2] **C.-L. Hsieh** and S. X. Yu. **Dense Flow from Adaptive Correspondence.** NeurIPS, 2026. [Project]

[3] **C.-L. Hsieh***, O. Azulay*, and S. X. Yu. **Learning from Human Visual-Tactile Experience for Precise Contact-Aware Humanoid Object Operation.** *In preparation.*

[4] **C.-L. Hsieh***, Z. Wang*, S. X. Yu, E. Corona, S. Sasidharan, and E. D. Sumer. **Where to Hitch? Finding Small, Rare Parts Across Long Spatiotemporal Contexts.** NeurIPS 2026 Workshop: LCFM. [Paper]

* Equal contribution.

Other Publications

[5] Y.-C. Lo, **C.-L. Hsieh**, H.-W. Chiang, and A.-Y. A. Wu. **EECS: Efficient End-Cloud Collaborative System with On-Demand Offloading Mechanism for Convolutional Neural Network.** IEEE Internet of Things Journal, 12(8):11081-11095, 2025.

[6] **C.-L. Hsieh**, Y.-C. Lo, and A.-Y. A. Wu. **Trainable Policy for the On-Demand Offloading on Edge-Cloud Collaborative System.** IEEE MLSP, 2023.

[7] Y.-C. Lo, **C.-L. Hsieh**, and A.-Y. A. Wu. **Constraints-Aware Trainable Pruning with System Optimization for the On-Demand Offloading Edge-Cloud Collaborative System.** IEEE MLSP, 2023.

Research Experience

University of Michigan *Ann Arbor, MI*

Sept. 2024 - Present

Graduate Research Assistant

- **Test-time motion steering:** Developed a visual state-first diffusion planner that steers predicted body states, then generates motion latents for perceptive humanoid recovery without retraining.
- **Human motion priors:** Built a diverse recovery repertoire by composing human motions and adapting them to terrain; trained perceptive control with PPO experts and online DAgger.
- **Humanoid whole-body control on Unitree G1:** Deployed and evaluated perceptive control, demonstrating diverse, stable recovery and test-time steering in simulation and on hardware.
- **Optical flow estimation (FATE):** Developed adaptive correspondence that separates matching scale from pixel-level flow resolution, achieving state-of-the-art zero-shot accuracy; first-author NeurIPS 2026 paper.
- **Contact-aware learning:** Developing policies from human visual-tactile experience for wheeled-object operation on G1; hands-on experience with Aria glasses and PICO teleoperation.

May 2026 - Present

Trailer Auto-Annotation

Funded by Hyundai America Technical Center, Inc. (HATCI)

- **Fine-grained semantic localization (HitchIt):** Developed training-free localization of small, uncommon parts using visual examples and part relationships, with informative views anchoring tracking across recorded videos.

Academia Sinica *Taipei, Taiwan*

June 2023 - June 2024

Full-time Research Assistant

- **Diffusion video editing:** Developed motion-capturing attention and null-text inversion for temporal consistency under large object and camera motion.

National Taiwan University *Taipei, Taiwan*

Jan. 2022 - June 2023

Undergraduate Research Assistant

- **Efficient inference:** Developed contrastive offloading policies and co-developed constraints-aware pruning with 75% less computation and 70% less bandwidth.
- **FPGA acceleration (2021-2023):** Implemented banded Smith-Waterman in Verilog and verified the accelerator through RIFFA.

Technical Skills

Human data and robot learning	Human motion priors and composition; motion-latent representations; contact-rich whole-body control; PPO; DAgger; state-first diffusion planning; test-time steering.
Robotics platforms	Unitree G1 deployment and evaluation; Aria glasses; PICO teleoperation; ROS2; NVIDIA Isaac Sim, Isaac Lab, Isaac Gym; MuJoCo.
Perception and learning	PyTorch; optical flow and dense correspondence; visual prompting and semantic localization; egocentric depth and LiDAR-inertial odometry; visual-tactile learning; diffusion Transformers; contrastive learning; cross-dataset evaluation.
Research tooling	Hands-on experience with AI coding and research agents.
Programming and hardware	Python, C/C++, MATLAB, Verilog; FPGA prototyping.

Teaching Experience

University of Michigan *Ann Arbor, MI*

Fall 2025 - Winter 2026

Graduate Student Instructor

EECS 442: Computer Vision — Winter 2026
EECS 542: Advanced Topics in Computer Vision — Fall 2025
CSE 598: Action and Perception — Fall 2025

Honors and Awards

Second Place, NTU EE Bachelor Thesis Contest — 2023

Dean's List, National Taiwan University — 2022-23

Second Place, Taiwan Semiconductor Research Institute Integrated Circuit Design Contest — 2022

Leadership and Service

Commencement speaker, NTU Electrical Engineering — 2023

Summer camp director, six-day camp for 120 participants — 2022

Student association, led activities — 2021-22