Hsiang-Wei (Eddie) Huang

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SUMMARY

I am a Ph.D. student at the University of Washington. I work in the information processing lab advised by Prof. Jenq-Neng Hwang. My current research focuses on **Vision Language Models**, **Large Language Models** and **3D Understanding**. See more on my **website**.

EDUCATION

University of Washington   **Mar 2023 – Expected 2026 | Seattle**
PhD in Electrical and Computer Engineering

University of Washington   **Sep 2021 – Mar 2023 | Seattle**
Master of Science in Electrical and Computer Engineering

National Chiao Tung University   **Sep 2017 – Dec 2020 | Taiwan**
Bachelor of Science

WORK EXPERIENCE

Applied Scientist Intern   **Jun 2025 – Sep 2025**
Amazon Lab 126   Bellevue, WA
- I will join the Amazon Lab 126 this summer for another year of applied scientist internship.

Applied Scientist Intern   **Jun 2024 – Sep 2024**
Amazon Lab 126   Bellevue, WA
- Work on 3D scene understanding Large Language Models (LLMs) with the Visual Perception team.
- Proposed a LLM token compression method that achieve SOTA performance on various 3D understanding benchmarks.
- One first-author paper accepted at CVPR 2025.

Research Assistant   **Mar 2022 – Current**
University of Washington   Seattle, WA
- Work on various research topics and projects with multiple publication records in object detection, tracking, counting, human action recognition, pose estimation, diffusion model, vision-language model, 3D understanding, and video understanding.

Computer Vision Research Intern   **Feb 2023 – Apr 2023**
Chimei Automotive   Taiwan
- Developed a real-time multi-class FCWS (Forward Collision Warning System) for trucks and construction vehicles.
- Improve vehicle LDWS (Lane Departure Warning System) accuracy by **30%** under poor visibility condition with auto encoder.

PUBLICATIONS

- **Zero-shot 3D Question Answering via Voxel-based Dynamic Token Compression**   2025
  Computer Vision and Pattern Recognition (CVPR)
  Hsiang-Wei Huang, Fu-Chen Chen, Wenhao Chai, Che-Chun Su, Lu Xia, Sanghun Jung, Cheng-Yen Yang, Jenq-Neng Hwang, Min Sun, Cheng-hao Kuo

- **MambaMOT: State-Space Model as Motion Predictor for Multi-Object Tracking**   2025
  International Conference on Acoustics, Speech, and Signal Processing (ICASSP)
  Hsiang-Wei Huang, Cheng-Yen Yang, Wenhao Chai, Zhongyu Jiang, Jenq-Neng Hwang

- **3D Visual Grounding with Reasoning LLM**   2025
  In submission
  Hsiang-Wei Huang, Kuang-Ming Chen, Wenhao Chai, Cheng-Yen Yang, Jenq-Neng Hwang

- **ToSA: Token Merging with Spatial Awareness**   2025
  In submission
  Hsiang-Wei Huang, Wenhao Chai, Kuang-Ming Chen, Cheng-Yen Yang, Jenq-Neng Hwang

- **Shot-Aware and Layout-Guided Personalized Vehicle Image Generation**   2025
  In submission
  Hsiang-Wei Huang, Cheng-Yen Yang, Yanting Zhang, Pyongkun Kim, Kwangju Kim, Jenq-Neng Hwang

- **Packaging DiTs for Joint Motion-Text Generation**   2024
  In Submission
  Zhongyu Jiang, Wenhao Chai, Zhuoran Zhou, Cheng-Yen Yang, Hsiang-Wei Huang, Jenq-Neng Hwang

- **Technical Report for ReID-SAM on SkiTB Visual Tracking Challenge 2025**   2025
  Technical Report
  Kunjun Li, Cheng-Yen Yang, Hsiang-Wei Huang, Jenq-Neng Hwang

- **Shot-Aware and Layout-Guided Personalized Vehicle Image Generation**   2025
  In submission
  Hsiang-Wei Huang, Cheng-Yen Yang, Yanting Zhang, Pyongkun Kim, Kwangju Kim, Jenq-Neng Hwang

- **SAMURAI: Adapting SAM 2 for Visual Object Tracking with Motion Cues**   2024
  In Submission
  Cheng-Yen Yang, Hsiang-Wei Huang, Wenhao Chai, Zhongyu Jiang, Jenq-Neng Hwang

- **Adapting SAM2 for Visual Object Tracking: 1st Place Solution for MMVPR Challenge Mutli-Modal Tracking**   2024
  ICPR MMVPR Workshop
  Cheng-Yen Yang*, Hsiang-Wei Huang*, Pyong-Kun Kim, Chien-Kai Kuo, Jui-Wei Chang, Jenq-Neng Hwang

- **GTA: Global Tracklet Association for Multi-Object Tracking in Sports**   2024
  ACCV MLCSA Workshop
  Jiacheng Sun, Hsiang-Wei Huang, Cheng-Yen Yang, Zhongyu Jiang, Jenq-Neng Hwang

- **RT-Pose: A 4D Radar Tensor-based 3D Human Pose Estimation and Localization Benchmark**   2024
  European Conference on Computer Vision (ECCV)
  Yuan-Hao Ho, Jen-Hao Cheng, Sheng Yao Kuan, Zhongyu Jiang, Wenhao Chai, Hsiang-Wei Huang, Chih-Lung Lin, Jenq-Neng Hwang

- **ToddlerAct: A Toddler Action Recognition Dataset for Gross Motor Development Assessment**   2024
  ECCV ABAW Workshop
  Hsiang-Wei Huang, Jiacheng Sun, Cheng-Yen Yang, Zhongyu Jiang, Jenq-Neng Hwang

- **An Online Approach and Evaluation Method for Tracking People Across Cameras in Extremely Long Video Sequences**   2024
  CVPR AI City Challenge Workshop
  Cheng-Yen Yang*, Hsiang-Wei Huang*, Pyong-Kun Kim, Zhongyu Jiang, Jenq-Neng Hwang

- **Iterative Scale-up Expansion and Deep Features Association for Multi-Object Tracking in Sports**   2024
  WACV RWS Workshop
  Hsiang-Wei Huang, Cheng-Yen Yang, Jiacheng Sun, Pyong-Kun Kim, Kwang-Ju Kim, Chung-I Huang, Jenq-Neng Hwang

- **Sea You Later: Metadata-Guided Long-Term Re-Identification for UAV-Based Multi-Object Tracking**   2024
  WACV MaCVi Workshop
  Cheng-Yen Yang, Hsiang-Wei Huang, Zhongyu Jiang, Heng-Cheng Kuo, Jie Mei, Jenq-Neng Hwang

- **A Density-Guided Temporal Attention Transformer for Indiscernible Object Counting in Underwater Videos**   2024
  IEEE ICASSP
  Cheng-Yen Yang, Hsiang-Wei Huang, Zhongyu Jiang, Hao Wang, Farron Wallace, Jenq-Neng Hwang

- **Boosting Online 3D Multi-Object Tracking through Camera-Radar Cross Check**   2024
  IEEE Intelligent Vehicles Symposium
  Sheng-Yao Kuan, Jen-Hao Cheng, Hsiang-Wei Huang, Jenq-Neng Hwang

- **Enhancing Multi-Camera People Tracking with Anchor-Guided Clustering and ID Re-Assignment**   2023
  CVPR AI City Challenge Workshop
  Hsiang-Wei Huang*, Cheng-Yen Yang*, Zhongyu Jiang, Jenq-Neng Hwang

- **Observation Centric and Central Distance Recovery for Athlete Tracking**   2023
  WACV CV4WS Worksop
  Hsiang-Wei Huang, Cheng-Yen Yang, Samartha Ramkumar, Chung-I Huang, Jenq-Neng Hwang

Honors & Awards

2nd Place, 2025 WACV SkiTB Visual Tracking Challenge [URL]   2025
- Mentored a master student and secured the 2nd place of the competition with 87.0 F1 score.
- Solution presented at the WACV CV4WS workshop.

Taiwan Future Tech Award [URL]   2024
- Collaborated with Taiwan National Center for High-performance Computing and proposed a traffic monitoring framework.
- Awarded with the proposed *Digital City-Smart Traffic Congestion Prediction and Police Service Support System*.

1st Place, 2024 ICPR Multi-modal Tracking Challenge [URL]   2024
- Secured the 1st place of the competition with 89.4 AUC among 53 participants.
- Paper presented at the ICPR MMVPR workshop.

1st Place, 2024 WACV MaCVi Challenge - UAV-based Multi-Object Tracking and Re-Identification [URL]   **2024**
- Present a meta-data aided re-identification method for long-term multi-object tracking and re-identification.
- Achieved the best performance with an HOTA of 69.5 in the 2024 WACV Maritime Computer Vision Challenge.

1st Place, 2024 WACV MaCVi Challenge - USV-based Multi-Object Tracking [URL]   **2024**
- Present a strong model ensemble method to conduct tracking on USV-based multi-object tracking.
- Achieved the highest HOTA performance in the 2024 WACV Maritime Computer Vision Challenge.

1st Place, 2023 CVPR AI City Challenge in Multi-Camera People Tracking [URL]   **2023**
- Present a robust anchor-guided clustering method for multi-camera people tracking and re-identification.
- Achieved the best performance with an IDF1 of 95.36, in the 2023 AI City Challenge Track 1 on the public testing set.

3rd Place, 2022 ECCV DeeperAction Challenge - SportsMOT Track on Multi-actor Tracking [URL]   **2022**
- Ranked **3rd place** in HOTA among over 130 teams on the final leaderboard.
- Achieved over **73.9%** HOTA on sports player tracking in three different sports scenes.
- Paper presented at the ECCV DeeperAction Workshop.

SKILLS

Programming Languages.   Python, SQL, C, Matlab

Software Tools.   Pytorch, Tensorflow, Numpy, Scikit-learn, Pandas, OpenCV, Open3D, Linux, Git, AWS, Azure, LaTex

Languages.   English, Mandarin