Hsiang-Wei (Eddie) Huang

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Summary

I am a current Ph.D. student studying Electrical and Computer Engineering at the University of Washington. I work in the information processing lab, advised by Professor Jenq-Neng Hwang. My research interests lie around **Multi-Object Tracking**, **Large Language Model**, **Vision Language Model**, and **3D Understanding**

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

Skills

Programming Languages : Python, SQL, C, Matlab
Software Tools : Pytorch, Tensorflow, Numpy, Scikit-learn, Pandas, OpenCV, Linux, Git, AWS, Azure, SQLite3, LaTex
Languages : English, Chinese

Honors & Awards

1st Place, 2024 WACV MaCVi Challenge - UAV-based Multi-Object Tracking and Re-Identification [URL] **Sep 2023 - Nov 2023**
- 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] **Sep 2023 - Nov 2023**
- Present a strong model ensemble method to conduct tracking on USV-based multi-object tracking.
- Achieved the best performance with an HOTA of 21.5 in the 2024 WACV Maritime Computer Vision Challenge.

1st Place, 2023 CVPR AI City Challenge in Multi-Camera People Tracking [URL] **Feb 2023 - Mar 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 which consists of data from real and synthetic multi-camera settings.

3rd Place, 2022 ECCV DeeperAction Challenge - SportsMOT Track on Multi-actor Tracking [URL] **Jun 2022 – Sep 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 including basketball, volleyball, and football.
- Paper presented at the **ECCV DeeperAction Workshop, 2022.**

Publications

- **Exploring Learning-based Motion Models in Multi-Object Tracking**
  Hsiang-Wei Huang, Cheng-Yen Yang, Wenhao Chai, Zhongyu Jiang, Jenq-Neng Hwang – In submission to NIPS 2024
- **VersaT2I: Improving Text-to-Image Models with Versatile Reward**
  Jianshu Guo, Wenhao Chai, Jie Deng, Hsiang-Wei Huang, Jenq-Neng Hwang, Gaoang Wang – In submission to NIPS 2024
- **RT-Pose: A 4D Radar-Tensor based 3D Human Pose Estimation and Localization Benchmark**
  Yuan-Hao Ho, Jen-Hao Cheng, Sheng-Yao Kuan, Zhongyu Jiang, Wenhao Chai, Hsiang-Wei Huang, Jenq-Neng Hwang – ECCV 2024
- **An Online Approach and Evaluation Method for Tracking People Across Cameras in Extremely Long Video Sequence**
  Cheng-Yen Yang, Hsiang-Wei Huang*, Pyong-Kun Kim, Zhongyu Jiang, Jenq-Neng Hwang – 2024 CVPR Workshop*
- **Iterative Scale-Up ExpansionIoU and Deep Features Association for Multi-Object Tracking in Sports**
  Hsiang-Wei Huang, Cheng-Yen Yang, Jiacheng Sun, Jenq-Neng Hwang – 2024 WACV Workshop
- **Sea You Later: Metadata-Guided Long-Term Re-Identification for UAV-Based Multi-Object Tracking**
  Cheng-Yen Yang, Hsiang-Wei Huang, Zhongyu Jiang, Heng-Cheng Kuo, Jie Mei, Jenq-Neng Hwang – 2024 WACV Workshop
- **A Density-Guided Temporal Attention Transformer for Indiscernible Object Counting in Underwater Videos**
  Cheng-Yen Yang, Hsiang-Wei Huang, Zhongyu Jiang, Hao Wang, Farron Wallace, Jenq-Neng Hwang – 2024 IEEE ICASSP

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

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

- **Observation Centric and Central Distance Recovery for Athlete Tracking**
  Hsiang-Wei Huang, Cheng-Yen Yang, Jenq-Neng Hwang – 2023 WACV Workshop

Work Experience

Applied Scientist Intern **Jun 2024 – Sep 2024**
Amazon.com Bellevue, WA
- Work on 3D scene understanding LLM with the Visual Perception team.

Computer Vision Research Intern **Feb 2023 – Apr 2023**
Chimei Motor Electronics Tainan, 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.
- Provide object tracking and re-identification background knowledge presentation for company's engineering team.

Capstone Project Member **Jan 2022 – Jun 2022**
Wyze Seattle, WA
- Developed an end to end system that can detect and classify dog breeds using the Vision Transformer model.
- Built a fine-grained object tracker that can track and classify **91 kinds of different objects** and **120 breeds of dogs.**