Jen-Hao Cheng

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2-nd year Ph.D. student at Information Processing Lab,
Department of Electrical & Computer Engineering, University of Washington
Advisor: Dr. Jenq-Neng Hwang
Research Direction: Vision + Language / Computer Vision

Education

2023 – Now **Ph.D. Electrical and Computer Engineering**
University of Washington

2021 – 2023 **M.S. Electrical and Computer Engineering**
University of Washington

2015 – 2019 **B.S. Electrical Engineering**
National Taiwan University
Advisors: Dr. Lung-Pan Cheng and Dr. Wanjiun Liao

Publication

1. H.-I. Liu, C. Wu, **J.-H. Cheng**, W. Chai, S.-Y. Wang, G. Liu, J.-N. Hwang, H.-H. Shuai, and W.-H. Cheng, "Monotakd: Teaching assistant knowledge distillation for monocular 3d object detection," in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2025.
2. **J.-H. Cheng**, Y.-H. Ho, S. Y. Kuan, Z. Jiang, W. Chai, H.-W. Huang, J.-N. Hwang, and C.-L. Lin, "Rt-pose: A 4d radar-tensor based 3d human pose estimation and localization benchmark," in *ECCV*, 2024.
3. **J.-H. Cheng**, S.-Y. Kuan, H.-I. Liu, H. Latapie, G. Liu, and J.-N. Hwang, "Centerradarnet: Joint 3d object detection and tracking framework using 4d fmcw radar," in *2024 IEEE International Conference on Image Processing (ICIP)*, 2024.
4. **J.-H. Cheng**, Y. Wang, J.-T. Huang, S.-Y. Kuan, Q. Fu, C. Ni, S. Hao, G. Wang, G. Xing, H. Liu, and J.-N. Hwang, "Vision meets mmwave radar: 3d object perception benchmark for autonomous driving," in *IEEE Intelligent Vehicles Symposium (IV)*, 2024.
5. S. Y. Kuan, **J.-H. Cheng**, H.-W. Huang, W. Chai, C.-Y. Yang, B.-F. Wu, and J.-N. Hwang, "Boosting online 3d multi-object tracking through camera-radar cross check," in *IEEE Intelligent Vehicles Symposium (IV)*, 2024.
6. P. Z. Ramirez, ..., **J.-H. Cheng**, H.-I. Liu, H.-W. Huang, C.-Y. Yang, Z. Jiang, Y.-H. Peng, A. Huang, and J.-N. Hwang, "Ntire 2024 challenge on hr depth from images of specular and transparent surfaces," in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024.
7. **J.-H. Cheng**, Y. Chen, T.-Y. Chang, H.-E. Lin, P.-Y. C. Wang, and L.-P. Cheng, "Impossible staircase: Vertically real walking in an infinite virtual tower," in *IEEE Virtual Reality and 3D User Interfaces (VR)*, 2021. DOI: 10.1109/VR50410.2021.00025.
8. P.-Y. Wang, C.-H. Xu, P.-Y. Wang, H.-Y. Huang, Y.-W. Chang, **J.-H. Cheng**, Y.-H. Lin, and L.-P. Cheng, "Game illusionization: A workflow for applying optical illusions to video games," in *ACM Symposium on User Interface Software and Technology (UIST)*, 2021. DOI: 10.1145/3472749.3474824.

9 Y.-H. Hsu, **J.-H. Cheng**, K.-Y. Liao, Y.-S. Wang, T.-H. Chen, H.-Y. Chen, C.-K. Yen, and W. Liao, "Ntu smart edge for wireless virtual reality," in *2020 IEEE International Conference on Consumer Electronics - Taiwan (ICCE-Taiwan)*, 2020. DOI: 10.1109/ICCE-Taiwan49838.2020.9258121.

10 H.-Y. Huang, C.-W. Ning, P.-Y. Wang, **J.-H. Cheng**, and L.-P. Cheng, "Haptic-go-round: A surrounding platform for encounter-type haptics in virtual reality experiences," in *ACM Conference on Human Factors in Computing Systems (CHI)*, 2020. DOI: 10.1145/3313831.3376476.

Research Experience

Information Processing Lab, University of Washington (Jan. 2022 - Now)

- Multi-modal large-language-model-enabled autonomous driving system
- Human pose estimation using radar and camera
- Vision language model for video understanding
- 3D computer vision and sensor fusion for autonomous driving perception system

Human-Computer Interaction Lab, National Taiwan University (Sep. 2019 - Mar. 2021)

- Virtual Reality (VR) and haptic device research
- Human-computer interaction (HCI) and user interface research

Internet Research Lab, National Taiwan University (Jul. 2019 - Mar. 2020)

- Implemented 5G and Multi-Access Edge Computing (MEC) video streaming applications for mobile VR devices with Unity3D, a 5G base station, and a MEC server

Work Experience

Industry

2024 Summer, Fall — Research Intern, Generative AI, Microsoft
Collaborators: Qin Cai, Yi-Ling Chen , Vibhav Vineet

- Training multi-modal language models to better align with videos for temporal understanding
- Constructed a data annotation pipeline and created large-scale video data for SFT training
- Model evaluation on public video temporal understanding benchmarks and achieved state-of-the-art performance

Work Experience (continued)

Academic

2022 Winter -2024 Spring — Graduate Research Assistant Supported by Cisco
Collaborators: Hugo Latapie, Gaowen Liu

- Achieved Camera 3D Object Detection state-of-the-art performance (MonoTAKD published in CVPR 2025)
- State-of-the-art radar 3D object detector (CenterRadarNet published in IEEE ICIP 2024)
- Novel mulit-modal 3D object detection and tracking framework (published in IEEE IV 2024)
- Implemented a data collection system consisting of FMCW radar, LiDAR, and stereo camera based on ROS and collected novel real-world perception dataset for autonomous driving (published in IEEE IV 2024)

2022, 2023, 2024 Fall — Teaching Assistant, Deep Learning for Big Visual Data (Graduate Level)

2023 Winter — Teaching Assistant, Digital Signals And Filtering (Undergraduate Level)

2019 Fall -2021 Spring — Research Assistant, Computer Science at National Taiwan University
Advisor: Lung-Pan Cheng,

- Built novel VR systems: Impossible Staircase published in IEEE VR 2021, Hpatic-go-round published in ACM CHI 2020
- Achieved novel Multi-person VR experiences by creating cool applications using Unity3D.
- Implemented haptic devices with Soc (ESP8266, ESP32)
- Conducted Human Computer Interaction research including user interface and user studies