Ding-Jiun (Willy) Huang

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EDUCATION

Carnegie Mellon University (CMU) Pittsburgh, PA
M.S. in Computer Vision Dec. 2025
National Taiwan University (NTU) Taipei, Taiwan
B.S. in Computer Science and Information Engineering Jun. 2023

RESEARCH PROJECTS

Carnegie Mellon University, Human Sensing Laboratory Pittsburgh, PA
3D Gaussian Splatting with Generalizable Enhancement 08/2024~Present
Advised by Prof. Fernando De la Torre

- Developing a generalizable enhancing model to refine any 3D gaussian splatting system trained from poor quality image dataset by utilizing 2D priors such as diffusion priors.
- Tested our model in applications including 3D human avatar, achieving enhanced perceptual quality.

NVIDIA Research Taiwan & NTU, Vision and Learning Laboratory Taipei, Taiwan
High-Quality Scene Reconstruction via Radiance Field Super-Resolution 08/2023~06/2024
Advised by Dr. Cheng Sun & Prof. Yu-Chiang Frank Wang

- Designed an attention-based 3D voxel super-resolution module that is capable of enhancing any low-quality neural radiance field by incorporating feature distillation to DVGO's voxel grids.
- Achieves a significant 4.6% PSNR score improvement over Zip-NeRF, the SOTA novel view synthesis method, and reaches better perceptual quality.

Arizona State University, Make Programming Simple Laboratory Remote, Tempe, AZ
Motion Planning for Autonomous Vehicles 07/2022~06/2023

- Proposed a motion planning algorithm for autonomous vehicles that fits b-spline curves to predict waypoints of vehicles, effectively avoiding possible collisions.

National Taiwan University, Cyber-Physical Systems Laboratory Taipei, Taiwan
Consensus-Based Platooning for Autonomous Vehicles 07/2022~06/2023
Advised by Prof. Chung-Wei Lin

- Designed a fault-proof communication protocol for autonomous vehicles in platooning to exchange position information based on a majority vote mechanism that detects which vehicle is sending malicious information.
- Recovered platooning that is affected by faulty position information with 43% reduction in system settling time over SOTA method and minimizes position state error under 0.01 (m).

PUBLICATIONS

[1] **Ding-Jiun Huang**, Zi-Ting Chou, Yu-Chiang Frank Wang, Cheng Sun. "ASSR-NeRF: Arbitrary-Scale Super-Resolution on Voxel Grid for High-Quality Radiance Fields Reconstruction", *arxiv preprint, 2024.* [project page]
[2] **Ding-Jiun Huang**, Yu-Ting Kao, Tieh-Hung Chuang, YaChun Tsai, Jing-Kai Lou, and Shuen-Huei Guan. "SB-VQA: A Stack-Based Video Quality Assessment Framework for Video Enhancement", *IEEE Conference on Computer Vision and Pattern Recognition (CVPR) NTIRE, 2023.* [paper]
[3] Tzu-Yen Tseng, **Ding-Jiun Huang**, Jia-You Lin, Po-Jui Chang, Chung-Wei Lin, Changliu Liu. "Consensus-Based Fault-Tolerant Platooning for Connected and Autonomous Vehicles", *IEEE Symposium on Intelligent Vehicle, 2023.* [paper]

WORK EXPERIENCE

KKCompany, Advanced Research Center Taipei, Taiwan
Research Engineer Intern 07/2022~06/2023

- Conducted research of video enhancement to super-resolve old or corrupted videos for streaming service, leading to quality improvement of 1.2 dB in PSNR for testing film data.
- Crafted a video super-resolution method that surpasses all SOTAs in VSR task by integrating StableDiffusion-based model with SwinIR and specialized training objectives.

TECHNICAL SKILLS

Programming/Tools: Python, CUDA, Pytorch, Tensorflow, C/C++, Scikit-Image, OpenCV, MATLAB, Unity, Blender
Research Topics: Novel-View Synthesis, 3D Head Modeling, Super-Resolution, Autonomous Vehicles Platooning