DING-JIUN HUANG

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EDUCATION

National Taiwan University, Taiwan *September 2019 - June 2023*
Bachelor of Computer Science and Information Engineering

- Overall GPA: 4.17/4.3, Last-60 GPA: 4.19/4.3
- **Relevant Coursework**: Machine Learning* , Deep Learning for Computer Vision*, Data Structure and Algorithms, Applied Deep Learning*, Computer Graphics*, Intro. to Computer Networks, Operating Systems, Sytem Programming, Linear Algebra, Discrete Mathematics * denotes graduate-level

RESEARCH EXPERIENCE

National Taiwan University, Vision and Learning Laboratory *July 2023 - Present*
Undergraduate Researcher, Advisor: Prof. Yu-Chiang Frank Wang *Field: 3D Computer Vision*
Topic: High-Quality Neural Radiance Field with Super-Resolution (SR) [CVPR,2024]

- Designed a novel framework for SR of neural radiance field. Trained with low-quality training views, our proposed method can render high-quality novel views with richer details.
- Proposed an attention-based SR module that directly applies SR on voxel-based volumetric representation and achieves cross-scene generalizability with a two-stage multi-scene training.

National Taiwan University, Cyber-Physical Systems Laboratory *July 2022 - June 2023*
Undergraduate Researcher, Advisor: Prof. Chung-Wei Lin *Field: Intelligent Vehicles*
Topic: Consensus-Based Platooning for Autonomous Vehicles [IV,2023]

- Designed a robust communication protocol for platooning, consisting of connected autonomous vehicles, to protect the platoon from malicious attack.
- Proposed a fault-tolerant controller to detect faulty position or speed information sent from certain malicious vehicles and reinstate the platooning.

KKCompany, Advanced Research Center *July 2022 - June 2023*
Research Engineer Intern, Advisor: Dr. Shuen-Huei Guan *Field: Video Enhancement*
Topic: Video Quality Assessment (VQA) for Video Enhancement [CVPR NTIRE,2023]

- Proposed a temporal-attention-based novel framework for quality assessment of video content processed by enhancement methods such as deblurring, relighting, super-resolution.
- Constructed a dataset of professionally generated content (PGC) for VQA to facilitate the applications in video streaming industry.
- Utilized YouTube heatmap to analyze the relationship among VQA results, video quality and degree of appeal to users.

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"
IEEE/CVF CVPR 2024 **Under Review**

[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/CVF CVPR NTIRE 2023 **Accepted**

[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 (IV) 2023 **Accepted**

HONORS AND AWARDS

Appier Most Promising Research Work, NTU CSIE Research Projects Exhibition 2021
Presidential Award as Top 1% Student, National Taiwan University

WORK EXPERIENCE

KKCompany, Advanced Research Center *July 2022 - June 2023*

Research Engineer Intern

Topic: Video Super-Resolution (VSR), Video Frame-Interpolation (VFI)

- Conducted research of video enhancement tasks to enhance the content of company's video streaming service, leading to quality improvement of 1.2 dB in PSNR for testing film data.
- Integrated diffusion-based model with a swin-transformer-based SR module and modified training objectives, obtaining an SR method that surpasses all SOTAs in VSR task.

HPAIR Harvard Conference 2021 *September 2020 - August 2021*

Software Engineering Associate

- Managed website and database with Javascript in collaboration with computer science majors from Harvard University.
- Built up online meeting environments to help organizing an online conference with 1000+ participants and speakers including the presidents of several countries and Nobel Prize Winners.

SELECTED PROJECTS

Reinforcement Learning with In-Memory Computing *September 2021 - June 2022*

Research Project, Advisor: Prof. Tei-Wei Kuo *Field: Embedded System, Machine Learning*

- Designed a ReRAM-based accelerator as well as a gate-level pipeline to improve the efficiency of reinforcement learning to mitigate the memory bottleneck problem with Von-Neumann architecture.
- Reduced the overhead to move heavy model weights between GPU and memory devices, the proposed method reaches an x2.1 speedup in training.

JetFinger: Devices for Immersive Gaming Experience *September 2021 - June 2022*

Research Project, Advisor: Prof. Mike Y. Chen *Field: Human-Computer Interaction*

- Aimed to create a VR sword fighting game with immersive gaming experience by producing realistic feedback on users' VR handheld.
- Designed an air-propulsion device attached on VR handheld, creating reaction force whenever user hits something with a sword in the game.

TEACHING EXPERIENCE

Data Strucutre and Algorithm, course at NTU *March 2021 - June 2021*

- Designed assignments of algorithms for more than 150+ students in this compulsory course for CSIE majors and taught students with advanced data structures and algorithms in scheduled TA hours.
- Received Outstanding Teaching Assistant Award by NTU CSIE.

Network Administration and System Administration, course at NTU *September 2021 - June 2022*

- Taught students about applications related to network and system administration including firewall, DNS, web service, virtual machine management with hands-on implementations as TA.

EXTRACURRICULAR ACTIVITIES

Minister of Activities Department, NTU CSIE Student Council *September 2021 - June 2022*

- Hosted NTU CSIE camp, a 6-day event including courses as well as activities for high school students, as the main coordinator.
- Hosted EECS Music Festival, an event involving performances by professional musicians as well as student bands with 500+ audiences.

Member of Tennis Team, College of Management *September 2021 - June 2022*

- Helped organize courses as well as tennis competitions at NTU college of management.
- Participated in NTU Tennis Competition, an annual tournament with 50+ participants.