Ning-Hsu (Albert) Wang

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Research Interest

Computer Vision, Machine Learning, 3D Geometry & Reconstruction, Robotic Perception, VR/AR, 360° Images

Education

National Tsing Hua University   Feb. 2018 – Aug. 2020
Master of Science in Electrical Engineering, advised by Prof. Min Sun, GPA: 4.3/4.3   *Hsinchu, Taiwan*

National Chiao Tung University   Sep. 2013 – Jun. 2017
Bachelor of Science in Mechanical Engineering, Last 60 credits GPA: 3.74/4.3   *Hsinchu, Taiwan*

Publications

[1] **Ning-Hsu Wang**, Ren Wang, Yu-Lun Liu, Yu-Hao Huang, Yu-Lin Chang, Chia-Ping Chen, Kevin Jou, "Bridging Unsupervised and Supervised Depth from Focus via All-in-Focus Supervision", ICCV 2021. [link]

[2] Cheng Sun, Chi-Wei Hsiao, **Ning-Hsu Wang**, Min Sun, Hwann-Tzong Chen, "Indoor Panorama Planar 3D Reconstruction via Divide and Conquer", CVPR 2021 Oral. [link]

[3] **Ning-Hsu Wang**, Bolivar Solarte, Yi-Hsuan Tsai, Wei-Chen Chiu, Min Sun, "360SD-Net: 360° Stereo Depth Estimation with Learnable Cost Volume", ICRA 2020, ICCV-W 2019 Spotlight. [link]

Experience

MediaTek | Computer Vision Research Intern   Feb. 2020 – Mar. 2021
- Published one IEEE conference paper in the Computer Vision field (**ICCV 2021**) and applied for **US Patent** (in process) with topics related to depth estimation on images with bokeh effects (shallow DoF).
- Presented a new depth estimation dataset on blurred images and a new unsupervised training technique.
- Outperformed SOTA methods on DDFF-12-Scenes (5.5%), HCI-4D-Light-Field (20%) and Defocus-Net (27%) Dataset.

VSLab, National Tsing Hua University | Graduate Research Assistant   Feb. 2018 – Aug. 2020
- Published two IEEE conference papers in the Computer Vision and Robotics fields (**ICRA 2020, CVPR 2021 Oral**).
- Led the 360° Stereo Project, advised by Prof. Min Sun, Prof. Wei-Chen Chiu and Dr. Yi-Hsuan Tsai; worked on Planar Reconstruction, co-advised by Prof. Hwann-Tzong Chen.
- Presented two 360° stereo datasets and a novel DNN targeting depth estimation on 360° stereo images (ICRA 2020).
- Proposed a new benchmark and a new method leveraging the phenomenon of indoor human structures and 360° images for indoor panorama planar reconstruction (CVPR 2021 Oral).

Young Entrepreneurs of the Future, Epoch Foundation | Technical Lead   Jan. 2018 – Jul. 2018
- Led a technical team in a nationwide startup competition and won Second Place in the first stage of the two stages.
- Designed an electronic mask-like device with active noise canceling for both meeting and gaming.

Selected Projects

3D Horror Scene: Horror Style Transfer Using 360° Views and 3D Reconstruction [PDF]
- Collected 5000 horror scene images with web crawling from YouTube horror game videos for style transfer training.
- Implemented CycleGAN for style transfer and LayoutNet for 360° layout reconstruction.
- Combined both model outputs (horror style 360° images and 3D room layout) to form a 3D model of horror rooms.

Unmanned Aircraft Remote Delivery System (Drone)
- Designed and implemented the drone mechanism, motor control, delivery, and real-time surveillance system.
- Demonstrated the UAV control for unseen location object delivery with a load of 300g.

KNR Robot Navigation and Object Detection in Maze
- Designed and manufactured the KNR mechanism with multi-sensor (camera, ultrasonic and infrared sensor).
- Programmed the navigation system, including motor control, multi-sensor feedback, and image processing in LabVIEW.

Technical Skills

Programming: Python, C/C++, HTML/CSS | **Tools**: PyTorch, TensorFlow, OpenCV, Scikit-Learn, Vim, Linux, Git, LaTeX
Software/Hardware: LabVIEW, Matlab, LTSpice, ANSYS-Fluent, AutoCAD, Solidworks, Arduino, 8051 | **Toefl**: 104

Honors and Awards

Honorary Member of The Phi Tau Phi Scholastic Honor Society of the Republic of China   **2020**
Appier Conference Scholarship for Top Researches on Artificial Intelligence   **2020**
Arctic Code Vault Contributor (GitHub)   **2020**