# Ning-Hsu Wang

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## Research Interest

Computer Vision, Machine Learning, 3D Geometry, 3D Reconstruction, Robotic Perception, 360° Images

## Education

**National Tsing Hua University**                                                    Jan. 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, GPA: 3.41/4.0*                            *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", in Submission 2021.

[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.

[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.

## Experience

**MediaTek | Computer Vision Research Intern**                                         Feb 2020 – Mar 2021
- Worked on research topics related to stereo matching and depth estimation on images with bokeh effects (shallow DoF).
- Presented a new dataset for model training on blurred images.
- Proposed a new unsupervised training technique on depth estimation.

**VSLab, National Tsing Hua University | Graduate Research Student**          Jan 2018 – August 2020
- Led the 360° Stereo Project, advised by Prof. Min Sun, Prof. Wei-Chen Chiu and Dr. Yi-Hsuan Tsai (ICRA 2020).
- Presented two 360° stereo datasets as well as a novel DNN targeting depth estimation on 360° stereo images.
- Worked on Planar Reconstruction, co-advised by Prof. Hwann-Tzong Chen (CVPR 2021 Oral).
- Proposed a new benchmark and a new method leveraging the phenomenon of indoor human structures and 360° images for indoor panorama planar reconstruction.

## 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**

## Selected Projects

**3D Horror Scene: Horror Style Transfer Using 360° Views and 3D Reconstruction**
- Collected horror scene data for model training.
- Implemented **CycleGAN** for style transfer and **LayoutNet** for 360° layout reconstruction.

**Design and implementation of Logistic UAV (Unmanned Aerial Vehicle)**
- Designed and implemented the UAV mechanism, unloading mechanism, motor control system and surveillance system.
- Demonstrated the UAV control for unseen location object unloading.

**Object Searching Robot Design**
- Designed and implemented the KNR mechanism and ultrasonic avoidance system.
- Programmed the motor control, sensor feedback and image processing in LabVIEW.

## Technical Skills

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