

NING-HSU WANG

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SUMMARY OF QUALIFICATIONS

- Research abilities developed by designing novel deep neural networks and submitting/presenting in top conferences/workshops.
- Robotics and Mechanical Engineering skills enhanced by designing mechanism and control system in multiple undergraduate projects.
- Project lead of a 14-month and ongoing stereo depth estimation project.
- Demonstrated teamwork skills as a collaborator of multiple projects (360° Stereo, Planar Reconstruction, 3D Horror Scene, etc.) and nationwide startup competition.
- Self-motivated fast learner who explores various fields of expertise from Computer Vision, Robotics to Business.

EDUCATION

National Tsing Hua University

January 2018 - Present

Master in Electrical Engineering

Advised by Prof. Min Sun.

GPA: 4.3/4.3

National Chiao Tung University

Sep 2013 - June 2017

Bachelor in Mechanical Engineering

GPA: 3.41/4.0, Last 60: 3.67/4.0, Ranking: 13/49, 25/99

PUBLICATIONS

360SD-Net: 360° Stereo Depth Estimation with Learnable Cost Volume

- **Ning-Hsu Wang, Bolivar Solarte, Yi-Hsuan Tsai, Wei-Chen Chiu, Min Sun**
- *International Conference on Robotics and Automation 2020 (ICRA 2020), Accepted*
- *Short Version in ICCV 2019 360PI Workshop, Spotlight*

AWARDS

Appier Conference Scholarship for Top Researches on Artificial Intelligence.

2020

EXPERIENCE

Mediatek

February 2020 - Present

- *Computer Vision Research Intern*

Vision Science Lab, National Tsing Hua University

January 2018 - Present

- *Research Student, advised by Prof. Min Sun.*

Project lead of 360° Stereo Depth Estimation, co-advised by Prof. Wei-Chen Chiu and Dr. Yi-Hsuan Tsai. We proposed the Learnable Cost Volume to improve stereo matching on 360° images, and was accepted in **ICRA 2020** (short version accepted as **Spotlight Paper in ICCV-W 2019**).

Planar Reconstruction, co-advised by Prof. Hwann-Tzong Chen, is currently in submission.

Young Entrepreneurs of the Future, Epoch Foundation

January 2018 - July 2018

- *Contestant, Team Technical Lead*

A nationwide startup competition including the following progress: Garage Party, Elevator Pitch, Workshop, with a **Second Place Award** in Garage Party.

Atos	<i>August 2017</i>
- <i>On-site Engineer</i>	
- <i>29th Summer Universiade internet system maintenance.</i>	
Tokyo Electron Limited Robot Combat	<i>2017</i>
- <i>Contestant</i>	
Programming Education Product Sales	<i>2014 - 2016</i>
- <i>Part-time Sales</i>	
Hsinchu District Badminton Competition	<i>2015</i>
- <i>Umpire and Service Judge</i>	
University System of Taiwan, Badminton Invitation Competition	<i>2014</i>
- <i>Website Management and Promotion</i>	

PROJECT HIGHLIGHTS

360° Stereo Depth Estimation and 3D Reconstruction

- Presented a new 360° stereo dataset.
- Implementation of deep neural network baselines as well as conventional methods.
- Presented a deep neural network with several novel modules for 360° stereo depth estimation.

Planar Reconstruction

- Proposed a novel deep neural network to reconstruct promising 3D indoor scenes from 360° images.
- Presented a new 360° planar dataset as well as a new benchmark with two baseline models.
- Implementation of deep neural network baselines with adaption to 360° images.
- Presented a new planar representation to solve the 360° ground truth surface inconsistency.

3D Horror Scene: Horror Style Transfer Using 360° Views and 3D Reconstruction

- Collection of horror scene data.
- Implementation of **CycleGAN** for style transfer.
- Implementation of **LayoutNet** for 360° layout reconstruction.

Design and implementation of Logistic UAV (Unmanned Aerial Vehicle)

- Design and implementation of UAV mechanism.
- Design and implementation of unloading mechanism and motor control system.
- Design of UAV surveillance system.
- Demonstration of UAV control for unseen location object unloading.

Object Searching Robot Design

- Design and implementation of KNR mechanism and ultrasonic avoidance system.
- LabVIEW programming of motor control, sensor feedback and image processing.

Validation of *The Lambda Method for Integer Ambiguity Estimation*

- Implementation of *The Lambda Method for Integer Ambiguity Estimation* with Matlab simulation.

ABILITIES AND CERTIFICATIONS

Programming	Python, C/C++, Assembly, HTML, CSS
DL Framework	Pytorch, TensorFlow
Software & Tools	LabVIEW: Industrial Control & Simulation
	Matlab: Mathematics Simulation
	LTSpice: Electrical Circuit Simulation
	ANSYS-Fluent: Computational Fluid Dynamics Simulation
	AutoCAD, Solidworks: Computer-aided Design Drafting Software
Hardware	Arduino, 8051
Misc.	OpenCV, Github, Vim, Linux, L^AT_EX
Language	Fluent in Mandarin (Native)
	Proficient in English, TOEIC Golden Certification (Score: 900)
	Elementary Proficiency in Japanese (4 semesters)