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***

EXPERIENCE

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 *August 2017*
- *On-site Engineer*
- *29th Summer Universiade internet system maintenance.*

Tokyo Electron Limited Robot Combat *2017*
- *Contestant*

Programming Education Product Sales *2014 - 2016*
- *Part-time Sales*

Hsinchu District Badminton Competition *2015*
- *Umpire and Service Judge*

University System of Taiwan, Badminton Invitation Competition *2014*
- *Website Management and Promotion*

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 nerual network with several novel modules for 360° stereo depth estimation.

Planar Reconstruction
- Presented a new 360° planar dataset as well as a new benchmark.
- Implementation of deep neural network baselines with adaption to 360° images.
- Presented a new planar representation to solve the 360° ground truth surface inconsistency.
- Proposed several modifications for the adaptation of perspective methods in 360° data.

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.
- Demostration 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, LaTeX**
Language	**Fluent in Mandarin (Native)**
	Proficient in English, TOEIC Golden Certification (Score: 900)
	Elementary Proficiency in Japanese (4 semesters)

AWARDS

International Conf. on Computer Vision 2019 (ICCV 2019) 360 PI Workshop *2019*
- ***Spotlight Paper***
- ***360SD-Net: 360° Stereo Depth Estimation with Learnable Cost Volume***

Young Entrepreneurs of the Future Garage Party, Epoch Foundation *2018*
- ***Second Place***