Cho-Ying Wu

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RESEARCH INTERESTS

3D Computer Vision, Image Processing, Machine Learning, Optimization, Compressive Sensing

EDUCATION

University of Southern California (USC)   Aug. 2018 – present
PhD Candidate, Department of Computer Science
Advised by Prof. Ulrich Neumann

National Taiwan University (NTU)   Aug. 2015 – Jun. 2017
M.S. in *Communication Engineering*
Advised by Prof. Jian-Jiun Ding
Overall GPA : 4.00/4.00 (4.30/4.30), ranked 1st out of total 121 students
Thesis : Sparse and low-rank model for occluded face recognition and nonconvex optimization

National Taiwan University (NTU)   Sept. 2011 – Jun. 2015
B.S. in *Electrical Engineering*, *double major in Law*, *group of Judicial Administration*

PUBLICATION

[1] **Cho-Ying Wu** and U. Neumann, "Accurate Facial Geometry Prediction: 3D Facial Alignment, Orientation Estimation, and 3D Face models," submitted to ICCV 2021.

[2] **Cho-Ying Wu** and U. Neumann, "Scene Completeness-Aware Lidar Depth Completion for Driving Scenario," **ICASSP 2021**.

[2] **Cho-Ying Wu**, X. Hu, M. Happold, and U. Neumann, "Geometry-Aware Instance Segmentation with Disparity maps," **CVPR 2020** Workshop of Scalability on Autonomous Driving.

[3] Qiangeng Xu, Xudong Sun, **Cho-Ying Wu**, Panqu Wang, Ulrich Neumann, "Grid-GCN for Fast and Scalable Point Cloud Learning" **CVPR 2020.**

[4] **Cho-Ying Wu**, Y. Zhong, S. You, and U. Neumann, "Deep RGB-D Canonical Correlation Analysis For Sparse Depth Completion," **NeurIPS 2019**.

[5] **Cho-Ying Wu** and U. Neumann, "Iterative L0 Smoothing and Edge Enhancing for Building Outline Abstraction," *IEEE International Conference on Image Processing* (**ICIP 2019**).

[6] **Cho-Ying Wu** and U. Neumann, Efficient Multi-Domain Dictionary Learning with GANs," IEEE Global Signal Information Processing (**GlobalSIP 2019,** *Oral*).

[7] **Cho-Ying Wu** and J. J. Ding, "Nonconvex approach for sparse and low-rank constrained models with dual momentum," arXiv, preprint.

[8] **Cho-Ying Wu** and J. J. Ding, "Occluded face recognition using low-rank regression with generalized gradient direction," *Pattern Recognition* (**PR**), vol. 80, pp. 256–268, 2018. (Impact Factor: 5.9)

[9] **Cho-Ying Wu** and J. J. Ding, "A fast nonconvex regularizer for low-rank matrix completion," *IEEE Asia-Pacific Signal and Information Processing Association* (APSIPA), Dec. 2017.

[10] **Cho-Ying Wu** and J. J. Ding, "Occlusion pattern-based dictionary for robust face recognition," *IEEE International Conference on Multimedia and Expo* (ICME), Seattle, USA, Jul. 2016.

SELECTED PROJECTS OTHER THAN PUBLICATIONS

- **CORE 3D** in Cooperation with Vision System Inc. (VSI)   Aug. 2018 – Jan 2019, USC
  - 3D modeling from single digital elevation map (DEM) of city view.
- **Stereo Vision for Instance Segmentation** at Argo AI   May 2019 – Aug. 2019
  - High-Quality stereo pairs to produce precise geometric information for Instance Segmentation
- **Stereo-Lidar Fusion for Depth Map Enhancement** at USC   Sept 2019 - Jan 2020
  - Scene completeness-aware depth completion using stereo disparity maps.
- **Face Science** at Amazon Lab 126   May. 2020 – Aug. 2020
  - Face Science and robotics for multi-task/ multi-modal/ multi-representation learning on facial alignments, face orientation estimation, and 3D face modeling.

INTERNSHIPS

Facebook Reality Labs, Redmond, WA   May 2021 – Aug. 2021

Amazon Lab126, Bellevue, WA   May 2020 - Aug. 2020

- 3D Facial Alignments, Face Orientation Estimation, and 3D Face Reconstruction.
- State-of-the-art performance on all these three tasks.

Argo AI, Palo Alto, CA   May 2019 - Aug. 2019

- Computer vision intern for autonomous driving
- Sensor fusion for instance segmentation. 2D, 2.5D, and 3D information fusion.

HONORS AND SCHOLARSHIPS

- **Second Prize of Young Author Best Thesis Award**, Chinese Inst. of EECS   Oct. 2017
- Best and most renowned Master thesis award on EECS in Taiwan
- **Honorable Mention Award of Master Thesis Award**, Inst. of Inf. & Computation Mach.   Feb. 2018
- Best Master thesis award on CS in Taiwan

ACADEMIC SERVICES

- **Teaching Assistant**
- Computer Graphics, University of Southern California   Fall, 2020
- Database Systems, University of Southern California   Spring, 2020
- Computer Graphics, University of Southern California   Fall, 2019
- Data Structures and Object Oriented Design, University of Southern California   Spring, 2019

RELATED SKILL

Programming skill: Python, C/C++, Matlab, CUDA

Tools and Libraries: PyTorch, TensorFlow, AWS