

## Research Interests

---

Deep Learning for Computer Vision, 3D Computer Vision, Scene Understanding, Image/Video Processing

## Education

---

### National Taiwan University

Taipei, Taiwan

Master of Science in Computer Science and Information Engineering

Sep. 2018–Jun. 2020

- Thesis: “3D Video Stabilization with Depth Estimation by CNN-based Optimization” **[CVPR2021]**  
Committee: Yi-Ping Hung (advisor), Yung-Yu Chuang, Yu-Chiang Frank Wang, Chu-Song Chen, Kuan-Wen Chen
- GPA: 4.24/4.3
- Rank: 7th/132

### National Chiao Tung University

Hsinchu, Taiwan

Bachelor of Science in Computer Science

Sep. 2014–Jun. 2018

- Network and Multimedia Engineering Program
- GPA: 4.14/4.3; (major) 4.2/4.3
- Rank: 1st/50
- Academic Achievement Award: four times (top 5% ranking in the program)

## Publications

---

1. **Yao-Chih Lee**, Kuan-Wei Tseng, Yu-Ta Chen, Chien-Cheng Chen, Chu-Song Chen and Yi-Ping Hung, “3D Video Stabilization with Depth Estimation by CNN-based Optimization,” *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021. [[webpage](#), [pdf](#)]
2. Yu-Ta Chen, Kuan-Wei Tseng, **Yao-Chih Lee**, Chun-Yu Chen, Yi-Ping Hung, “PixStabNet: Fast Multi-Scale Deep Online Video Stabilization with Pixel-based Warping,” *The 28th IEEE International Conference on Image Processing (ICIP)*, 2021. [[pdf](#)]
3. Hau Chu, Jia-Hong Lee, **Yao-Chih Lee**, Ching-Hsien Hsu, Jia-Da Li, Chu-Song Chen, “Part-aware Measurement for Robust Multi-View Multi-Human 3D Pose Estimation and Tracking,” *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops*, 2021. [[pdf](#)]
4. Ping-Jung Duh, Yu-Cheng Sung, **Yao-Chih Lee**, Kuan-Wen Chen, Liang-Yu Fan Chiang, “A Design of Vision-based Navigation System for the Visually Impaired,” *The Conference of Taiwan Human-Computer Interaction (TAICHI)*, 2018.
5. Yu-Cheng Sung, **Yao-Chih Lee**, Sarah Wang, Wei-Ting Hu, Kuan-Wen Chen, “An UAV Autopilot System for Sports Player Tracking,” *The Conference of Taiwan Human-Computer Interaction (TAICHI)*, 2017.

## Experiences

---

### Academia Sinica

Taipei, Taiwan

Research Assistant (full-time) advised by Prof. Chu-Song Chen

Sep. 2020–current

- Develop efficient and globally consistent video depth and camera pose estimation and outperform the state-of-the-art by 19% improvement. **[In submission]**.
- Develop real-time multi-view multi-human 3D pose estimation and tracking system **[CVPR Workshop 2021]**.
- Lead a research team of scene text spotting in self- and semi-supervised learning manners.

- Develop semi-supervised and conditional GAN-based metal artifact reduction for CT-MRI paired images.
- Develop image deblurring and denoising processes for multi-scale microscopy images.

### Human-AI Interaction Research Project

Research Assistant (part-time)

Taipei, Taiwan

Jul. 2020–Aug. 2020

- Advised by Yi-Hsiu Chen (National Chengchi University, Taiwan), partially Chien-Wen (Tina) Yuan (National Taiwan Normal University, Taiwan) and Gary Hsieh (University of Washington, Seattle)
- Develop experimental websites of human-AI collaborative scenarios to serve over 700 participants [In submission].

### imLab at National Taiwan University

Graduate Research Assistant advised by Prof. Yi-Ping Hung

Taipei, Taiwan

Sep. 2018–Jun. 2020

- Develop the first 3D learning-based video stabilization algorithm with self-supervised depth and pose estimation and consistently outperforms the state-of-the-art methods, especially in severely-shaky videos. [CVPR2021].
- Develop a real-time video stabilization algorithm in coarse-to-fine manner [ICIP2021].
- Develop self-supervised monocular depth and camera ego-motion estimation algorithm.
- Conduct experiments and analyses on the performance of local feature algorithms in visual SLAM systems.

### CoVis Lab at National Chiao Tung University

Undergraduate Research Assistant advised by Prof. Kuan-Wen Chen

Hsinchu, Taiwan

Aug. 2016–Jun. 2018

- Develop UAV autopilot and visual tracking system with OCR and human detection [TAICHI2017].
- Develop semantic segmentation with video streaming in a visual navigation system for visually impaired [TAICHI2018].
- Develop a semi-automatic annotation system of the real-world dataset for a viewpoint- and illumination-invariant local feature learning method.
- Develop semantic segmentation of 3D model and visual SLAM system for virtual reality headsets.

## Teaching

- **3D Computer Vision with Deep Learning Applications (CSIE5429)** Spring 2021  
Teaching Assistant (Instructor: Chu-Song Chen) at NTU, Taiwan
- **Digital Image Processing (CSIE5612)** Fall 2019  
Teaching Assistant (Instructor: Yi-Ping Hung) at NTU, Taiwan
- **Probability (CSIE2121)** Spring 2019  
Teaching Assistant (Instructor: Yi-Ping Hung) at NTU, Taiwan
- **Computer Vision for UAV Autopilot (DCP1249)** Spring 2018  
Teaching Assistant (Instructor: Kuan-Wen Chen) at NCTU, Taiwan

## Awards and Academic Activities

- **Reviewer**, Pattern Recognition
- **Academic Achievement Award** × 4, (Top 5% ranking)  
Fall 2014, Spring 2016, Fall 2016, and Spring 2017
- **Excellence Award**, Undergraduate Project Competition  
An UAV autopilot system for sports player tracking
- **Departmental Core Course Scholarship**  
Top 3 ranking in the course of Operating System

## Extracurricular Activities

- **Director at Midland of Taiwan Alumni Association** in NCTU  
Sep. 2015–Aug. 2016
- **Member at Computer Science Association** in NCTU  
Jun. 2015–May. 2016
- **Member at Tennis Team of the Computer Science department** in NCTU  
Sep. 2014–Jun. 2016
- **Member at Fire Dance Club** in NCTU  
Sep. 2014–May. 2015