Yao-Chih Lee

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Research Interests

Computer vision, multi-view geometry, image and video processing, scene understanding.

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"
  Committee: Yi-Ping Hung (advisor), Yung-Yu Chuang, Yu-Chiang Frank Wang, Chu-Song Chen, Kuan-Wen Chen
- GPA: 4.24/4.30
- Rank: 7/132

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: 1/50

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.

2. 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.

3. 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.

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," *ACM SIGCHI Taipei Chapter (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," *ACM SIGCHI Taipei Chapter (TAICHI)*, 2017.

Experience

Academia Sinica — Taipei, Taiwan
Research Assistant (full-time) advised by Prof. Chu-Song Chen — Sep. 2020–current

- Develop self-supervised depth and camera ego-motion estimation for monocular video.
- Develop multi-view multi-human 3D pose estimation and tracking system.

- Lead a team and develop self- and semi-supervised learning methods for scene text spotting.
- 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 Taipei, Taiwan
Research Assistant (part-time) Jul. 2020–Aug. 2020

- Advised by Yi-Hsiu Chen (National Chengchi University, Taiwan), Chien-Wen (Tina) Yuan (National Taiwan Normal University, Taiwan), and Gary Hsieh (University of Washington, Seattle)
- Develop experimental websites for human-AI collaboration research with over 700 participants.

imLab@National Taiwan University collaborating with MediaTek, Inc. Taipei, Taiwan
Graduate Research Assistant (part-time) advised by Prof. Yi-Ping Hung Sep. 2018–Jun. 2020

- Develop the first 3D learning-based video stabilization algorithm with test-time training-based depth and camera pose estimation.
- Develop self-supervised monocular depth and camera ego-motion estimation algorithm.
- Develop a real-time video stabilization algorithm in coarse-to-fine manner.
- Conduct analysis on the performance of various local feature algorithms for SLAM systems.

CoVis Lab@National Chiao Tung University Hsinchu, Taiwan
Undergraduate Research Assistant (part-time) advised by Prof. Kuan-Wen Chen Aug. 2016–Jun. 2018

- Developed UAV autopilot system via visual tracking with OCR and human detection techniques.
- Developed video streaming for semantic segmentation in a navigation system for visually impaired.
- Developed semi-automatic labeling system for the real-world dataset of learning-based viewpoint- and illumination-invariant local feature.
- Developed semantic segmentation for 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

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

Academic activities

- **Pattern Recognition**
  Reviewer

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 — Sep. 2014–May. 2015