Yao-Chih Lee
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Computer Vision and Deep Learning · 3D Vision and Video Synthesis

# Education

2022 - Present
Ph.D. Student
Computer Science

**University of Maryland College Park** with a 3.96/4.0 GPA
**Advisor**: Jia-Bin Huang
**Research areas**: 3D vision and video synthesis, particularly focusing on reconstructing real-world scenes from casual videos for synthesis and editing.

2018 - 2020
M.S.
Computer Science and Information Engineering

**National Taiwan University** with a 4.24/4.3 GPA
**Thesis**: 3D Video Stabilization with Depth Estimation by CNN-based Optimization *(CVPR 2021)*
**Committee**: Yi-Ping Hung (Advisor), Yung-Yu Chuang, Yu-Chiang Frank Wang, Chu-Song Chen, Kuan-Wen Chen

2014 - 2018
B.S.
Computer Science

**National Chiao Tung University** with a 4.14/4.3 GPA
(now National Yang Ming Chiao Tung University)
**Major**: Network and Multimedia Program (rank 1st/50)

# Work Experience

06.2024 - 12.2024
Student Researcher

**Google DeepMind** in Cambridge, MA
Mentors: Forrester Cole, Erika Lu, Tali Dekel, and Sarah Rumbley
Generative Omnimatte: Learning to Decompose Video into Layers ***(CVPR 2025)***

05.2023 - 11.2023
Research Intern

**Adobe Research** in San Jose, CA
Mentors: Feng Liu, Zhoutong Zhang, Kevin Blackburn-Matzen, Simon Niklaus, and Jianming Zhang.
Fast View Synthesis of Casual Videos with Soup-of-Planes ***(ECCV 2024)***

09.2020 - 03.2022
Research Assistant

**Academia Sinica** in Taipei, Taiwan
Investigated an image restoration algorithm for medical CT images and other projects related to 3D computer vision. Supervised by Chu-Song Chen.

09.2018 - 06.2020
Graduate Research Assistant

**National Taiwan University** in Taipei, Taiwan
Investigated video stabilization algorithms with deep learning approaches ***(CVPR 2021)***. Advised by Yi-Ping Hung and collaborated with MediaTek, Inc.

08.2016 - 06.2018
Undergraduate Research Assistant

**National Chiao Tung University** in Hsinchu, Taiwan
Developed a vision-based drone autopilot system and investigated learning-based local features for SLAM systems. Advised by Kuan-Wen Chen.

# Publications

## Selected

2025
CVPR
Highlight presentation (13.5%)

**Generative Omnimatte: Learning to Decompose Video into Layers**
**Yao-Chih Lee**, Erika Lu, Sarah Rumbley, Michal Geyer, Jia-Bin Huang, Tali Dekel, Forrester Cole
webpage · pdf

2024 ECCV

### Fast View Synthesis of Casual Videos with Soup-of-Planes

**Yao-Chih Lee**, Zhoutong Zhang, Kevin Blackburn-Matzen, Simon Niklaus, Jianming Zhang, Jia-Bin Huang, Feng Liu

webpage · pdf

2023 CVPR

### Shape-aware Text-driven Layered Video Editing

**Yao-Chih Lee**, Ji-Ze Genevieve Jang, Yi-Ting Chen, Elizabeth Qiu, Jia-Bin Huang

webpage · pdf

2021 CVPR

### 3D Video Stabilization with Depth Estimation by CNN-based Optimization

**Yao-Chih Lee**, Kuan-Wei Tseng, Yu-Ta Chen, Chien-Cheng Chen, Chu-Song Chen, Yi-Ping Hung

webpage · pdf

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2024 arXiv preprint

### VividDream: Generating 3D Scene with Ambient Dynamics

**Yao-Chih Lee**, Yi-Ting Chen, Andrew Wang, Ting-Hsuan Liao, Brandon Y. Feng, Jia-Bin Huang

*webpage · pdf*

2023 CAI

### Improved Contrastive Unpaired Translation for Metal Artifacts Reduction in Nasopharyngeal CT Images

Yu-Hsing Hsieh, Jia-Da Li, **Yao-Chih Lee**, Chu-Song Chen, LiFu Wu, and Skye H Cheng

*IEEE Conference on Artificial Intelligence · pdf*

2023 arXiv preprint

### Text-driven Visual Synthesis with Latent Diffusion Prior

Ting-Hsuan Liao, Songwei Ge, Yiran Xu, **Yao-Chih Lee**, Badour AlBahar, Jia-Bin Huang

*webpage · pdf*

2022 CVPRW

### Artistic Style Novel View Synthesis Based on A Single Image

Kuan-Wei Tseng, **Yao-Chih Lee**, Chu-Song Chen

*CVPR Workshop · webpage · pdf*

2022 arXiv preprint

### Globally Consistent Video Depth and Pose Estimation with Efficiency

**Yao-Chih Lee**, Kuan-Wei Tseng, Guan-Sheng Chen, Chu-Song Chen

*pdf · code*

2021 ICIP

### PixStabNet: Fast Multi-Scale Deep Online Video Stabilization with Pixel-based Warping

Yu-Ta Chen, Kuan-Wei Tseng, **Yao-Chih Lee**, Chun-Yu Chen, Yi-Ping Hung

*IEEE International Conference on Image Processing · pdf*

2021 CVPRW

### Part-aware Measurement for Robust Multi-View Multi-Human 3D Pose Estimation and Tracking

Hau Chu, Jia-Hong Lee, **Yao-Chih Lee**, Ching-Hsien Hsu, Jia-Da Li, Chu-Song Chen

*CVPR Workshop · pdf*

2018 TAICHI

### A Design of Vision-based Navigation System for the Visually Impaired

Ping-Jung Duh, Yu-Cheng Sung, **Yao-Chih Lee**, Kuan-Wen Chen, Liang-Yu Fan Chiang

*The Conference of Taiwan Computer-Human Interaction (TAICHI)*

2017 | **A UAV Autopilot System for Sports Player Tracking**
TAICHI | Yu-Cheng Sung, **Yao-Chih Lee**, Sarah Wang, Wei-Ting Hu, Kuan-Wen Chen
*The Conference of Taiwan Computer-Human Interaction (TAICHI)*

## Honors and Awards

2025 | **CVPR Outstanding Reviewer**
Award | 710 outstanding reviewers out of a total of 12582 reviewers (5.6 %)

09.2014 - 06.2017 | **Academic Achievement Awards** at NCTU
Award | Awarded 4 times to top 5% ranking in the semesters.

05.2017 | **Undergraduate Project Excellence Award** at NCTU
Award | Awarded to the project of a visual-based UAV autopilot system for sports player tracking.

01.2017 | **Core Course Award** at NCTU
Award | Awarded to the top 3 ranking in the core course, Operating System.

## Service

2025 | **Reviewer**
*CVPR · SIGGRAPH · ICCV*

2024 | **Reviewer**
*CVPR · ECCV · ACCV · ACM TOMM*

2023 | **Reviewer**
*CVPR · ICCV · SIGGRAPH Asia · Computer Vision and Image Understanding*

2022 | **Reviewer**
*Pattern Recognition.*

2021 | **Reviewer**
*Pattern Recognition.*

## Teaching

2024 | **Computer Vision**
Teaching Assistant | UMD CMSC426

2023 | **Introduction to Data Science**
Teaching Assistant | UMD CMSC320

2022 | **Introduction to Artificial Intelligence**
Teaching Assistant | UMD CMSC421

2021 | **3D Computer Vision with Deep Learning Applicions**
Teaching Assistant | NTU CSIE5429

2019 | **Digital Image Processing**
Teaching Assistant | NTU CSIE5612

2019 | **Probability**
Teaching Assistant | NTU CSIE2121

2018 | **Computer Vision for UAV Autopilot**
Teaching Assistant | NCTU DCP1249