Yu-Hsuan Yeh

alice12595@gmail.com | Github | Google Scholar | Personal Website

U.S. Permanent Resident (EB-1) — No sponsorship required.

EDUCATION

Carnegie Mellon University (CMU) — **Pittsburgh, PA, US**
- A paper published in **IEEE TPAMI 2022**.

Master of Science in Computer Vision — *Aug. 2022 - Dec. 2023*

National Yang Ming Chiao Tung University (NYCU) — **Hsinchu, Taiwan**
- Thesis-based research program - one first author paper per year: **CVPR 2020** and **CVPR 2021 (Oral)**.

Master of Science, Artificial Intelligence Graduate Program — *Sep. 2019 - Aug. 2021*

National Chung Hsing University (NCHU) — **Taichung, Taiwan**

Bachelor of Science, Electrical Engineering — *Sep. 2013 - Jun. 2017*

WORK EXPERIENCE

Adobe (On-Site) — **San Jose, CA, US**

Applied Scientist, Firefly — *Apr. 2024 - Present*
- Improve the Distribution Matching Distillation efficient model for image inpainting task (Photoshop feature)
- Building up the first Firefly eval hub system
- Proposed an enhanced VQA-score metric with more image attribute-level analysis
- Designed and implemented a novel VQA-score alignment pipeline

Adobe (On-Site) — **San Jose, CA, US**

Machine Learning Engineer Intern — *May. 2023 - Aug. 2023*
- Parameter Efficiency Fine-Tuning Research

Lumachain (Remote) — **Sydney, Australia**

Computer Vision Intern — *Feb. 2022 - Jun. 2022*
- Multi-Object Tracking Project:
  Building a deep-learning tracking model to monitor workers' behavior

National Tsing Hua University (On-Site) — **Hsinchu, Taiwan**

Research Assistant — *Oct. 2018 - Oct. 2021*
- Researched 360° image perception and reconstruction, with an emphasis on depth and layout estimation for indoor panoramic scenes.
- Explored 2D-to-3D transformation methods to reconstruct spatial structures from monocular 360° inputs.

Wistron NeWeb Corporation (On-Site) — **Hsinchu, Taiwan**

Advance Technology Development AI Lab - AI Summer Intern — *Jul. 2018 - Aug. 2018*
- Derain - Rain Removal Project:
  Building variational autoencoder and modifying style transfer models to remove rain

RESEARCH EXPERIENCE

Illumination and Imaging Laboratory (ILIM), Carnegie Mellon University — **Pittsburgh, PA, US**

Graduate Research, Advised by Prof. Srinivasa Narasimhan — *Jan. 2024 - Apr. 2024*
- **GenAI research: Object Insertion on Road Scene**
  Using a diffusion inpainting model for scene editing

Enriched Vision Applications Lab, National Yang Ming Chiao Tung University — **Hsinchu, Taiwan**

Graduate Research, Advised by Prof. Wei-Chen Chiu, Prof. Min Sun and NEC Lab Researcher Yi-Hsuan Tsai — *Sep. 2019 - Aug. 2021*
- **360 Degree Indoor Room Layout Estimation**
  Utilizing depth information to improve room layout prediction

Vision Science Lab, National Tsing Hua University — **Hsinchu, Taiwan**

Graduate Research, Advised by Prof. Min Sun, Prof. Wei-Chen Chiu and NEC Lab Researcher Yi-Hsuan Tsai — *Oct. 2018 - Sep. 2019*
- **360 Degree Depth Estimation**
  Fusing depth information from two different projections

Mediacore Lab, National Cheng Kung University — **Tainan, Taiwan**

Graduate Research, Supervised by Prof. Jar-Ferr Yang — *Jul. 2017 - Oct. 2018*
- **Unsupervised Monocular Depth Estimation Refinement**
  Utilizing instance segmentation algorithm to capture objects for accurate depth estimation

PUBLICATIONS

- **BiFuse++: Self-supervised and Efficient Bi-projection Fusion for 360 Depth Estimation** [paper][github]
  Fu-En Wang, Yu-Hsuan Yeh, Yi-Hsuan Tsai, Wei-Chen Chiu, Min Sun
  [TPAMI 2022]
  - We propose a new fusion module and Contrast-Aware Photometric Loss to improve the performance of BiFuse and increase the stability of self-training on real-world videos.
- **LED^2-Net: Monocular 360° Layout Estimation via Differentiable Depth Rendering** [paper][github]
  Yu-Hsuan Yeh, Fu-En Wang*, Min Sun, Wei-Chen Chiu, Yi-Hsuan Tsai*
  [CVPR 2021 Oral]
  - We propose a differentiable layout-to-depth procedure to convert the 360° layout representation into the 360° horizon-depth map, thus enabling the training objective for our layout estimation network to take advantage of 3D geometric information.
- **BiFuse: Monocular 360° Depth Estimation via Bi-projection Fusion** [paper][github]
  Yu-Hsuan Yeh, Fu-En Wang*, Min Sun, Wei-Chen Chiu, Yi-Hsuan Tsai*
  [CVPR 2020]
  - We propose a two-branch neural network leveraging two common projections – equirectangular and cubemap projections – as inputs to predict the depth map of a monocular 360° image.

DATASET PAPER

- **LayoutMP3D: Layout Annotation of Matterport3D** [paper][github]
  Yu-Hsuan Yeh, Fu-En Wang*, Min Sun, Wei-Chen Chiu, Yi-Hsuan Tsai*
  [Technical Report]
  - We release the first real-world dataset containing paired depth and layout annotations.

HONORS & AWARDS

- **Outstanding graduate student award**: around 8 people granted every year (< 5%) — Jun. 2021
  - in College of Electrical and Computer Engineering
- **Outstanding thesis awards**: only 3 master thesis awards were given — Aug. 2021
  - Institute for Public Policy Research(IPPR)
  - Conference on Computer Vision, Graphics, and Image Processing(CVGIP)
- **NovaTek Scholarship**: around 14 people granted every year (< 5%) — Aug. 2021
- **NovaTek Scholarship**: around 14 people granted every year (< 5%) — Aug. 2020
- **MOST AI scholarship**: a travel subsidy for CVPR 2020 — Jun. 2020

INVITED TALKS

- Jul. 2020: CVPR2020 paper sharing [BiFuse], MediaTek Inc and National Taiwan University
- Jul. 2020: CVPR2020 paper sharing [BiFuse], AILabs