

Wei-Yu (Harvey) Chen

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RESEARCH INTERESTS

Computational Photography, AR/VR, Optics, Computer Vision, and Machine Learning

EDUCATION

Carnegie Mellon University Pittsburgh, PA

Ph.D. Candidate in Electrical and Computer Engineering Sep 2018–

Cumulative QPA: **3.91**/4.00

Relevant Courses: Computational Photography, Physics Based Vision, Physics Based Rendering

National Taiwan University Taiwan

M.S. in Electrical Engineering Sep 2015– Jan 2017

Cumulative GPA: **4.20**/4.30; Overall ranking: 4/91; Major: **4.30**/4.30

Relevant Courses: Digital Image Synthesis, Advanced Computer Vision

National Taiwan University Taiwan

B.S. in Electrical Engineering Sep 2011– Jun 2015

Cumulative GPA: **4.16**/4.30; Overall ranking: 7/205; Major: **4.21**/4.30

Relevant Courses: Deep Learning, Machine Learning, Digital Visual Effects

RESEARCH EXPERIENCE

AI/ML team, Machine Intelligence Intern Apple

Neural Rendering May 2022–Aug 2022

- Synthesized novel views given input point clouds without per-scene training.
- Directly rendered point cloud as if they are meshes.

Image Science Laboratory, Ph.D. Candidate Carnegie Mellon University

Near-eye 3D display Sep 2018–

- Generated 3D contents containing a dense set of focal planes within a single exposure time.
- Enabled real-time 3D content streaming such as playing Minecraft.
- Provided a large etendue beyond the limit of an SLM.

Imaging behind Scattering Media

- Recovered mega-pixel fluorescent targets behind a chicken breast tissue from speckle patterns.
- Exploited memory effects to recover images from speckle correlation.
- Improved the speckle correlation contrast by self-interference.

Wavefront Sensing

- Recovered wavefront under a coherent laser illumination with an adaptively self-interfered setup.
- Provided an analytical solution with only four measurements and improved the robustness to noise.
- Measured and detected artifacts in a phase mask such as a diffractive Fresnel lens.

Vision and Learning Laboratory, Short-term Visiting Scholar Virginia Tech

Few-shot Classification Apr 2018– Jul 2018

- Empirically studied on performance of meta-learning methods in few-shot classification.
- Discovered that a slightly modified baseline achieved competitive performance with state-of-the-art.

Multimedia and Machine Learning Lab, Research Assistant

Academia Sinica, Taiwan

Unsupervised Domain Adaptation

Feb 2014– Jan 2017

- Alleviated domain difference in machine learning by exploiting cross-domain data correspondences.
 - Discovered latent structural information with maximum mean discrepancy.
 - Improved adversarial learning to integrate global and class-wise adaptation with pseudo labels.
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TEACHING EXPERIENCE

Course Developing Assistant

CMU 18786, Deep Learning, Spring 2023

Teaching Assistant

CMU 18793, Imaging and Video Processing, Fall 2022 & Summer 2020

PUBLICATIONS

- Split-Lohmann Multifocal Displays [\[site\]](#) [\[paper\]](#) [\[video\]](#) SIGGRAPH 2023
Yingsi Qin, **Wei-Yu Chen**, Matthew O’Toole, and Aswin C. Sankaranarayanan
- Pointersect: Neural Rendering with Cloud-Ray Intersection [\[site\]](#) [\[paper\]](#) CVPR 2023
Jen-Hao Rick Chang, **Wei-Yu Chen**, Anurag Ranjan, Kwang Moo Yi, and Oncel Tuzel
- Enhancing Speckle Statistics for Imaging Inside Scattering Media [\[paper\]](#) [\[video\]](#) Optica 2022
Wei-Yu Chen, Matthew O’Toole, Aswin C. Sankaranarayanan, and Anat Levin
- Reference Wave Design for Wavefront Sensing [\[paper\]](#) [\[video\]](#) ICCP 2021
Wei-Yu Chen, Anat Levin, Matthew O’Toole, and Aswin C. Sankaranarayanan
- Transfer Neural Trees: Semi-Supervised Heterogeneous Domain Adaptation and Beyond [\[paper\]](#) TIP 2019
Wei-Yu Chen, Tzu-Ming Harry Hsu, Yao-Hung Tsai, Ming-Syan Chen, and Yu-Chiang Frank Wang
- A Closer Look at Few-shot Classification [\[site\]](#) [\[paper\]](#) ICLR 2019
Wei-Yu Chen, Yen-Cheng Liu, Zsolt Kira, Yu-Chiang Frank Wang, and Jia-Bin Huang
- No More Discrimination: Cross City Adaptation of Road Scene Segmenters [\[site\]](#) [\[paper\]](#) ICCV 2017
Yi-Hsin Chen, **Wei-Yu Chen**, Yu-Ting Chen, Bo-Cheng Tsai, Yu-Chiang Frank Wang, and Min Sun
- Enhanced Canonical Correlation Analysis with Local Density for Cross-Domain Visual Classification [\[paper\]](#) ICASSP 2017
Wei-Jen Ko, Jheng-Ying Yu, **Wei-Yu Chen**, and Yu-Chiang Frank Wang
- Transfer Neural Trees for Heterogeneous Domain Adaptation [\[paper\]](#) ECCV 2016
Wei-Yu Chen, Tzu-Ming Harry Hsu, Yao-Hung Tsai, and Yu-Chiang Frank Wang
- Domain-Constraint Transfer Coding for Imbalanced Unsupervised Domain Adaptation [\[paper\]](#) AAAI 2016
Yao-Hung Hubert Tsai, Cheng-An Hou, **Wei-Yu Chen**, Yi-Ren Yeh and Yu-Chiang Frank Wang
- Unsupervised Domain Adaptation with Imbalanced Cross-Domain Data [\[paper\]](#) ICCV 2015
Tzu-Ming Hsu, **Wei-Yu Chen**, Cheng-An Hou, Yao-Hung Tsai, Yi-Ren Yeh, and Yu-Chiang Frank Wang
- Connecting the dots without clue: Unsupervised domain adaptation for cross-domain visual classification [\[paper\]](#) ICIP 2015
Wei-Yu Chen, Tzu-Ming Harry Hsu, Cheng-An Hou, Yi-Ren Yeh, and Yu-Chiang Frank Wang
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ACADEMIC SERVICES

Reviewer

NeurIPS 2022-23, ICCV 2023, CVPR 2021-22, ICCP 2022-23, TIP 2022-23

Meta Reviewer

ICCP 2023

SKILLS

Optics

Optical System, Interferometry, Diffractive Optics, Spatial Light Modulator (SLM)

Programming Languages

Python (Professional), MATLAB (Professional), C++ (Intermediate), R (Intermediate)

Toolboxes/ Libraries

Pytorch, Tensorflow, Open3D, OpenCV, Holotorch

Languages

English (Fluent), Mandarin Chinese (Native), Japanese (Intermediate)

AWARDS & HONORS

Best Paper Award

SIGGRAPH

Selected for research prominence and new contributions to the field.

July 2023

Scholarship for Study Abroad

Ministry of Education, Taiwan

Awarded to promising students overseas evaluated by experts in the field.

May 2021

Wei Shen and Xuehong Zhang Presidential Fellowship

Carnegie Mellon University

Awarded to outstanding students in the college of Engineering.

Feb 2021

M.S. Thesis Award

IPPR, Taiwan

Awarded from Taiwan's most representative associations for image processing.

Jul 2017

Representative to Receive Undergraduate Diploma

National Taiwan University

Awarded to students in the department with the top 5% GPA over all semesters.

Jun 2015
