

Research Interests

I work on *image/video processing*, *computer vision*, and *computational photography*, particularly on essential problems requiring *machine learning* with insights from *geometry* and *domain-specific knowledge*.

- 3D from multi-view and sensors
- Image and video synthesis and generation
- Low-level vision
- Computational imaging

Work Experience

- Feb. 2023 – **Department of Computer Science, National Yang Ming Chiao Tung University.**
Assistant Professor
- May 2022 – **Meta Reality Labs Research.**
Oct. 2022 *Research Scientist Intern*
- Jun. 2017 – **MediaTek Inc.**
Feb. 2022 *Senior Algorithm Development Engineer*
- Sep. 2014 – **MediaTek Inc.**
Jun. 2017 *Algorithm Development Engineer*

Selected Honors and Awards

- Aug. 2023 **Google's Research Grant**, *Google University Relations Programs*.
- Aug. 2023 **Best Ph.D. Thesis Award**, *The Chinese Image Processing and Pattern Recognition Society (IPPR)*.
- Jul. 2023 **Yushan Young Fellow Program**, *Ministry of Education, Republic of China (Taiwan)*.
- Nov. 2013 **Academic Achievement Award**, *Institute of Electronics, NCTU*.
- May. 2013 **Academic Achievement Award**, *Institute of Electronics, NCTU*.

Education

- 2017–2022 **Ph.D.**, *National Taiwan University, Taipei, Taiwan.*
Department of Computer Science and Information Engineering, CMLAB
Thesis: Restoring and Enhancing Images and Videos by Combining Modeling and Learning
Advisor: Yung-Yu Chuang [link](#)
- 2012–2014 **M.S.**, *National Chiao-Tung University, Hsinchu, Taiwan.*
Institute of Electronics, CommLab
Thesis: Wide-Angle Virtual View Synthesis with Depth-Based Background Modeling
Advisor: Hsueh-Ming Hang [link](#)
- 2008–2012 **B.S.**, *National Chiao-Tung University, Hsinchu, Taiwan.*
Department of Electronics Engineering

Publications [\(📄 Google Scholar profile\)](#)

Journal papers

- TPAMI 2021 **Learning to See Through Obstructions with Layered Decomposition.**
[Yu-Lun Liu](#), Wei-Sheng Lai, Ming-Hsuan Yang, Yung-Yu Chuang, and Jia-Bin Huang
IEEE Transactions on Pattern Analysis and Machine Intelligence, 2021

[📄 paper](#) [📁 project](#)

Conference papers

- ICCV 2023 **Learning Continuous Exposure Value Representations for Single-Image HDR Reconstruction.**
Su-Kai Chen, Hung-Lin Yen, [Yu-Lun Liu](#), Min-Hung Chen, Hou-Ning Hu, Wen-Hsiao Peng and Yen-Yu Lin
Proceedings of the IEEE/CVF International Conference on Computer Vision, 2023 [i](#) [project](#)
- ICCV 2023 **ImGeoNet: Image-induced Geometry-aware Voxel Representation for Multi-view 3D Object Detection.**
Tao Tu, Shun-Po Chuang, [Yu-Lun Liu](#), Cheng Sun, Ke Zhang, Donna Roy, Cheng-Hao Kuo, Min Sun
Proceedings of the IEEE/CVF International Conference on Computer Vision, 2023 [i](#) [project](#)
- CVPR 2023 **Progressively Optimized Local Radiance Fields for Robust View Synthesis.**
Andreas Meuleman, [Yu-Lun Liu](#), Chen Gao, Jia-Bin Huang, Changil Kim, Min H. Kim, Johannes Kopf
Proceedings of IEEE/CVF Conference on Computer Vision and Pattern Recognition, 2023 [i](#) [paper](#) [i](#) [project](#)
- CVPR 2023 **Robust Dynamic Radiance Fields.**
[Yu-Lun Liu](#), Chen Gao, Andreas Meuleman, Hung-Yu Tseng, Ayush Saraf, Changil Kim, Yung-Yu Chuang, Johannes Kopf, Jia-Bin Huang
Proceedings of IEEE/CVF Conference on Computer Vision and Pattern Recognition, 2023 [i](#) [paper](#) [i](#) [project](#)
- ICLR 2022 **Denoising Likelihood Score Matching for Conditional Score-based Data Generation .**
Chen-Hao Chao, Wei-Fang Sun, Bo-Wun Cheng, Yi-Chen Lo, Chia-Che Chang, [Yu-Lun Liu](#), Yu-Lin Chang, Chia-Ping Chen, and Chun-Yi Lee
International Conference on Learning Representations, 2022 [i](#) [paper](#)
- ICCV 2021 **Bridging Unsupervised and Supervised Depth from Focus via All-in-Focus Supervision.**
Ning-Hsu Wang, Ren Wang, [Yu-Lun Liu](#), Yu-Hao Huang, Yu-Lin Chang, Chia-Ping Chen, and Kevin Jou
Proceedings of IEEE/CVF Conference on Computer Vision, 2021 [i](#) [paper](#) [i](#) [project](#)
- ICCV 2021 **Hybrid Neural Fusion for Full-frame Video Stabilization.**
[Yu-Lun Liu](#), Wei-Sheng Lai, Ming-Hsuan Yang, Yung-Yu Chuang, and Jia-Bin Huang
Proceedings of IEEE/CVF Conference on Computer Vision, 2021 [i](#) [paper](#) [i](#) [project](#)
- ICPR 2020 **Explorable Tone Mapping Operators.**
Chien-Chuan Su, Ren Wang, Hung-Jin Lin, [Yu-Lun Liu](#), Chia-Ping Chen, Yu-Lin Chang, and Soo-Chang Pei
Proceedings of the 25th International Conference on Pattern Recognition, 2020 [i](#) [paper](#)
- ECCV 2020 **Learning Camera-Aware Noise Models.**
Ke-Chi Chang, Ren Wang, Hung-Jin Lin, [Yu-Lun Liu](#), Chia-Ping Chen, Yu-Lin Chang, and Hwann-Tzong Chen
Proceedings of European Conference on Computer Vision, 2020 [i](#) [paper](#) [i](#) [project](#)
- CVPR 2020 **Learning to See Through Obstructions.**
[Yu-Lun Liu](#), Wei-Sheng Lai, Ming-Hsuan Yang, Yung-Yu Chuang, and Jia-Bin Huang
Proceedings of IEEE/CVF Conference on Computer Vision and Pattern Recognition, 2020 [i](#) [paper](#) [i](#) [project](#)
- CVPR 2020 **Single-Image HDR Reconstruction by Learning to Reverse the Camera Pipeline.**
[Yu-Lun Liu](#)*, Wei-Sheng Lai*, Yu-Sheng Chen, Yi-Lung Kao, Ming-Hsuan Yang, Yung-Yu Chuang, and Jia-Bin Huang
Proceedings of IEEE/CVF Conference on Computer Vision and Pattern Recognition, 2020 [i](#) [paper](#) [i](#) [project](#)
- AAAI 2020 **Attention-based View Selection Networks for Light-field Disparity Estimation.**
Yu-Ju Tsai, [Yu-Lun Liu](#), Yung-Yu Chuang, and Ming Ouhyoung
Proceedings of AAAI Conference on Artificial Intelligence, 2020 [i](#) [paper](#)
- AAAI 2019 **Deep Video Frame Interpolation using Cyclic Frame Generation.**
[Yu-Lun Liu](#), Yi-Tung Liao, Yen-Yu Lin, and Yung-Yu Chuang
Proceedings of AAAI Conference on Artificial Intelligence, 2019 [i](#) [paper](#) [i](#) [project](#)
- Oral Presentation**
- APSIPA 2014 **Background modeling using depth information.**
[Yu-Lun Liu](#) and Hsueh-Ming Hang
Signal and Information Processing Association Annual Summit and Conference, 2014
- PCS 2013 **Virtual view synthesis using backward depth warping algorithm.**
Du-Hsiu Li, Hsueh-Ming Hang, and [Yu-Lun Liu](#)
Picture Coding Symposium, 2013

Preprints

- arXiv 2023 **Dual Associated Encoder for Face Restoration.**
Yu-Ju Tsai, [Yu-Lun Liu](#), Lu Qi, Kelvin CK Chan, Ming-Hsuan Yang
arXiv, 2023 [i](#) [paper](#)

arXiv 2023 **Portrait Distortion Correction with Perspective-Aware 3D GANs.**
Zhixiang Wang, [Yu-Lun Liu](#), Jia-Bin Huang, Shin'ichi Satoh, Sizhuo Ma, Guru Krishnan, Jian Wang
arXiv, 2023 [paper](#) [project](#)

Talks

- Invited Talk **Dynamic and Local Radiance Fields for Robust View Synthesis.**
MediaTek Inc., Hsinchu, Taiwan, May. 2023.
- Invited Talk **Dynamic and Local Radiance Fields for Robust View Synthesis.**
Institute of Communications Engineering, NTHU, Hsinchu, Taiwan, April. 2023.
- Invited Talk **Dynamic and Local Radiance Fields for Robust View Synthesis.**
The 5th Augmented Intelligence and Interaction (AII) Workshop, Taoyuan, Taiwan, March. 2023.
- Guest Lecture **What School and the Workplace Didn't Teach Me.**
NYCU, Hsinchu, Taiwan, March. 2023.
- Invited Talk **Learning to See the Unseen.**
Taichung Municipal Taichung First Senior High School, Taichung, Taiwan, March. 2023.
- Invited Talk **Learning to See the Unseen.**
Research Center for Information Technology Innovation, Academia Sinica, Taipei, Taiwan, January. 2023.
- Invited Talk **Learning to See the Unseen.**
Institute of Information Systems and Applications, NTHU, Hsinchu, Taiwan, November. 2022.
- Guest Lecture **Recent Progress on Video Restoration.**
CommE7005, NTU, Taipei, Taiwan, Mar. 2022.
- Guest Lecture **Rethinking Multimedia and IC Design in the Era of AI.**
CommE7005, NTU, Taipei, Taiwan, Nov. 2021.
- Guest Lecture **CV Final Project - Video Frame Interpolation.**
EEE5053, NTU, Taipei, Taiwan, May. 2021.
- Guest Lecture **Rethinking Multimedia and IC Design in the Era of AI.**
DEE4592, NCTU, Hsinchu, Taiwan, Mar. 2021.
- Invited Talk **Learning to See Through Obstructions.**
2020 CVPR Taiwan Sharing Session, NTU, Taipei, Taiwan, July. 2020.
- Invited Talk **Single-Image HDR Reconstruction by Learning to Reverse the Camera Pipeline.**
2020 CVPR Taiwan Sharing Session, NTU, Taipei, Taiwan, July. 2020.
- Guest Lecture **CV Final Project - Depth Estimation.**
EEE5053, NTU, Taipei, Taiwan, Jan. 2020.
- Invited Talk **Deep Video Frame Interpolation using Cyclic Frame Generation.**
The 3rd Augmented Intelligence and Interaction (AII) Workshop, Taoyuan, Taiwan, July. 2019.
- Oral **Deep Video Frame Interpolation using Cyclic Frame Generation.**
AAAI, Honolulu, Hawaii, USA, Jan. 2019.
- Guest Lecture **CV Final Project - Depth Estimation.**
EEE5053, NTU, Taipei, Taiwan, Jan. 2019.

Academic Services

- Organizer 2020 CVPR Taiwan Sharing Session
- Thesis Committees
 - Yi-Hsin Chen (advisor: Wen-Hsiao Peng) – PhD, expected 2024
 - Cheng Sun (advisors: Hwann-Tzong Chen and Min Sun) – PhD, Jul 2023
 - Hitika Tiwari (advisors: K. S. Venkatesh and Yong-Sheng Chen) – PhD, Jul 2023
 - Cheng-Kun Yang (advisors: Yung-Yu Chuang and Yen Yu-Lin) – PhD, Jul 2023

Journal Reviewer IEEE Transactions on Image Processing (**TIP**)
ACM Computing Surveys (**CSUR**)
Applied Soft Computing
Pattern Recognition
ACM Transactions on Graphics (**TOG**)
Information Fusion
IEEE Transactions on Multimedia
International Journal of Computer Vision
The Journal of Supercomputing
Computer Vision and Image Understanding
Computers & Graphics
Multidimensional Systems and Signal Processing
International Journal of Pattern Recognition and Artificial Intelligence

Conference Reviewer ACM SIGGRAPH (**SIGGRAPH**), 2022, 2023
IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2022, 2023
IEEE Conference on Computer Vision (**ICCV**), 2021, 2023
European Conference on Computer Vision (**ECCV**), 2020, 2022
British Machine Vision Conference (**BMVC**), 2023
Asian Conference on Computer Vision (**ACCV**), 2020, 2022
International Conference on Learning Representations (**ICLR**), 2022, 2023
Conference on Neural Information Processing Systems (**NeurIPS**), 2022, 2023
International Conference on Machine Learning (**ICML**), 2023
AAAI Conference on Artificial Intelligence (**AAAI**), 2021, 2022, 2023
International Joint Conference on Artificial Intelligence (**IJCAI**), 2021, 2022, 2023
ACM International Conference on Multimedia (**MM**), 2018
IEEE International Conference on Multimedia and Expo Workshops (**ICMEW**), 2023
International Conference on Robotics and Automation (**ICRA**), 2023

Research Mentor Research Mentor for interns at MediaTek Inc., 2019, 2020, 2021, 2022.

Professional Societies IEEE student member
AAAI student member
TAAI member
IPPR member

Teaching Experiences

Spring 2023 **CSIC30107 Video Compression**, Department of Computer Science, National Yang Ming Chiao Tung University.

Spring 2013 **Teaching Assistant of DEE1315 Probability and Statistics with Prof. Hsueh-Ming Hang**, Department of Electronics Engineering, National Chiao Tung University.

References

Ph.D. Advisor **Yung-Yu Chuang**, Professor of Department of Computer Science and Information Engineering, National Taiwan University.
✉ cyy@csie.ntu.edu.tw [homepage](#)

M.S. Advisor **Hsueh-Ming Hang**, Professor of Department of Electronics Engineering, National Chiao Tung University.
✉ hmhang@mail.nctu.edu.tw [homepage](#)

Director **Johannes Kopf**, Director of the Computational Photography Group, Meta.
✉ johannes.peter.kopf@gmail.com

Director **Shaw-Min Lei**, Director of the Multimedia Technology Development Division, MediaTek Inc.
✉ shawmin.lei@mediatek.com

Manager of Department **Yu-Lin Chang**, Manager of the Intelligent Vision Processing Department, MediaTek Inc.
✉ yulinchang@google.com

- Manager of Department **Chia-Ping Chen**, *Manager of the Intelligent Vision Processing Department*, MediaTek Inc.
✉ chiaping.chen@mediatek.com
- Research Mentor **Ming-Hsuan Yang**, *Professor of Electrical Engineering and Computer Science*, University of California at Merced.
✉ mhyang@ucmerced.edu [📄 homepage](#)
- Research Mentor **Jia-Bin Huang**, *Associate Professor of Department of Computer Science*, University of Maryland, College Park.
✉ jbhuang@umd.edu [📄 homepage](#)
- Research Mentor **Yen-Yu Lin**, *Professor of Department of Computer Science*, National Yang Ming Chiao Tung University.
✉ lin@cs.nctu.edu.tw [📄 homepage](#)
- Research Mentor **Wei-Sheng Lai**, *Software Engineer*, Google.
✉ wlai24@ucmerced.edu [📄 homepage](#)
- Research Mentor **Changil Kim**, *Research Scientist*, Meta.
✉ changil@csail.mit.edu [📄 homepage](#)
- Research Mentor **Hung-Yu Tseng**, *Research Scientist*, Meta.
✉ hytseng0509@gmail.com [📄 homepage](#)
- Research Mentor **Chen Gao**, *Research Scientist*, Meta.
✉ gaochen@meta.com [📄 homepage](#)