Chih-Hao Lin

Curriculum Vitae

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Research Interests

3D Computer Vision, Inverse Rendering, Simulation.

Education

Fall. 2022 - present	**University of Illinois Urbana-Champaign**, USA. Ph.D. in Computer Science, Advisor: Prof. Shenlong Wang ℹ link
Sept. 2019 - Apr. 2021	**National Taiwan University**, Taiwan. M.S. in Communication Engineering, Advisor: Prof. Yu-Chiang Frank Wang ℹ link
Sept. 2015 - Jun. 2019	**National Taiwan University**, Taiwan. B.S. in Electrical Engineering

Publications

- **HoloScene: Simulation-Ready Interactive 3D Worlds from a Single Video**.
  Hongchi Xia, **Chih-Hao Lin**, Hao-Yu Hsu, Quentin Leboutet, Katelyn Gao, Michael Paulitsch, Benjamin Ummenhofer, Shenlong Wang
  NeurIPS, 2025. ℹ project ℹ paper ℹ code

- **Controllable Weather Simulation and Removal with Video Diffusion Models**.
  Chih-Hao Lin, Zian Wang, Ruofan Liang, Yuxuan Zhang, Sanja Fidler, Shenlong Wang, Zan Gojcic
  ICCV, 2025. ℹ project ℹ paper

- **InvRGB+L: Inverse Rendering of Complex Scenes with Unified Color and LiDAR Reflectance Modeling**.
  Xiaoxue Chen, Bhargav Chandaka, **Chih-Hao Lin**, Ya-Qin Zhang, David Forsyth, Hao Zhao, Shenlong Wang
  ICCV, 2025. ℹ paper ℹ code

- **IRIS: Inverse Rendering of Indoor Scenes from Low Dynamic Range Images**.
  Chih-Hao Lin, Jia-Bin Huang, Zhengqin Li, Zhao Dong, Christian Richardt, Tuotuo Li, Michael Zollhöfer, Johannes Kopf, Shenlong Wang, Changil Kim
  CVPR, 2025. ℹ project ℹ paper ℹ code

- **DiffusionRenderer: Neural Inverse and Forward Rendering with Video Diffusion Models**.
  Ruofan Liang, Zan Gojcic, Huan Ling, Jacob Munkberg, Jon Hasselgren, **Chih-Hao Lin**, Jun Gao, Alex Keller, Nandita Vijaykumar, Sanja Fidler, Zian Wang
  CVPR, 2025. ℹ project ℹ paper ℹ code

- **UrbanIR: Large-Scale Urban Scene Inverse Rendering from a Single Video**.
  Chih-Hao Lin, Bohan Liu, Yi-Ting Chen, Kuan-Sheng Chen, David Forsyth, Jia-Bin Huang, Anand Bhattad, Shenlong Wang
  3DV, 2025. ℹ project ℹ paper ℹ code

- **AutoVFX: Physically Realistic Video Editing from Natural Language Instructions**.
  Hao-Yu Hsu, **Chih-Hao Lin**, Albert J. Zhai, Hongchi Xia, Shenlong Wang
  3DV, 2025. ⓘ project ⓘ paper ⓘ code
- **Video2Game: Real-time, Interactive, Realistic and Browser-Compatible Environment from a Single Video**.
  Hongchi Xia, **Zhi-Hao Lin**, Wei-Chiu Ma, Shenlong Wang
  CVPR, 2024. ⓘ project ⓘ paper ⓘ code
- **Sim-on-Wheels: Physical World in the Loop Simulation for Autonomous Driving**.
  Yuan Shen*, Bhargav Chandaka*, **Zhi-Hao Lin**, Albert Zhai, Hang Cui, David Forsyth, Shenlong Wang
  Robotics and Automation Letters (**RA-L**), 2023. ⓘ project ⓘ paper ⓘ code
- **ClimateNeRF: Extreme Weather Synthesis in Neural Radiance Field**.
  Yuan Li* ,**Zhi-Hao Lin***, David Forsyth, Jia-Bin Huang, Shenlong Wang
  ICCV, 2023. ⓘ project ⓘ paper ⓘ video ⓘ code
- **NeurMiPs: Neural Mixture of Planar Experts for View Synthesis**.
  Zhi-Hao Lin, Wei-Chiu Ma, Hao-Yu Hsu, Yu-Chiang Frank Wang, Shenlong Wang
  CVPR, 2022. ⓘ project ⓘ paper ⓘ code
- **Learning of 3D Graph Convolution Networks for Point Cloud Analysis**.
  Zhi-Hao Lin, Sheng-Yu Huang, Yu-Chiang Frank Wang,
  TPAMI, 2021. ⓘ paper ⓘ IEEE
- **Convolution in the Cloud: Learning Deformable Kernels in 3D Graph Convolution Networks for Point Cloud Analysis**.
  Zhi-Hao Lin, Sheng-Yu Huang, Yu-Chiang Frank Wang,
  CVPR, 2020. ⓘ paper ⓘ supp ⓘ video ⓘ code

Research Experience

May. 2024 - May 2025
Spatial Intelligence Lab, NVIDIA.
Research Scientist Intern
Mentors: Zan Gojcic ⓘ link, Zian Wang ⓘ link
○ Simulate controllable and realistic weather effects in videos. [**ICCV**, 2025]

May. 2023 - Dec. 2023
Computational Photography Group, Meta.
Research Scientist Intern
Mentor: Changil Kim ⓘ link
○ Proposed an inverse rendering framework of indoor scenes. [**CVPR**, 2025]

Apr. 2021 - Feb. 2022
Vision Group, University of Illinois Urbana-Champaign.
Visiting Student
Advisor: Prof. Shenlong Wang ⓘ link
○ Proposed to represent 3D scenes with multiple planes. [**CVPR**, 2022]

Sept. 2018 - Jan. 2022
Vision & Learning Lab, National Taiwan University, Taipei, Taiwan.
Master Student, **Research Assistant**
Advisor: Prof. Yu-Chiang Frank Wang ⓘ link
○ Proposed a point cloud analysis framework that is shift and scale-invariant, and demonstrated robustness in object-level tasks. [**CVPR**, 2020]
○ Verified that our point cloud analysis framework is robust to object rotation and outlier points, and outperformed previous works in scene-level task. [**TPAMI**, 2021]

Honors & Awards

2025 **Mavis Future Faculty Fellows**, UIUC ⓘ link.

2025	**Ministry of Education (Taiwan) Study Abroad Scholarship**.
2024	**Finalist**, Qualcomm Innovation Fellowship, North America 2024 ⓘ link.
2022	**Best Master Thesis Award**, Graduate Institute of Communication Engineering, NTU.
2021	**Best Master Thesis Award**, Taiwanese Association for Artificial Intelligence (TAAI).
2021	**Best Master Thesis Award**, Taiwan Society of Architectural Medicine (TSAM).
2020	**Novatek Education Foundation Scholarship**.
2020	**E.SUN Commercial Bank Scholarship**.

Teaching Experience & Talks

Oct. 2025	**Spotlight Speakers**, Wild3D workshop at ICCV, 2025 ⓘ link.
Fall 2025	**Teaching Assistant**, 3D Vision, UIUC.
Fall 2024	**Teaching Assistant**, 3D Vision, UIUC ⓘ link.
Nov. 2021	**Invited talk**, Taiwanese Association for Artificial Intelligence (TAAI).
Fall 2019	**Teaching Assistant**, Deep Learning for Computer Vision, NTU.
Spring 2019	**Teaching Assistant**, Signal & System, NTU.

Service

- **Social Media & Website Chair**, 3DV 2026 ⓘ link.
- **Reviewer**, CVPR, ICCV, ECCV, NeurIPS, 3DV, SIGGRAPH Asia, AAAI, WACV, TPAMI.