Chih-Hao Lin

Curriculum Vitae

✉ *cl121@illinois.edu*
chih-hao-lin.github.io

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 link

Sept. 2019 - Apr. 2021 **National Taiwan University**, Taiwan.
M.S. in Communication Engineering,
Advisor: Prof. Yu-Chiang Frank Wang link

Sept. 2015 - Jun. 2019 **National Taiwan University**, Taiwan.
B.S. in Electrical Engineering

Publications

- **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. project 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.
- **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. project paper 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. project paper 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
- **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. 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 - **Toronto Artificial 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 **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

Fall 2024 **Teaching Assistant**, 3D Vision, UIUC website.

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.