Kai-En **Lin**

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Research Interests

Image-based Rendering, Neural Rendering, View Synthesis, and AR/VR.

Education

University of California, San Diego — *San Diego, USA*

Ph.D. in Computer Science — *Sept. 2018 - June 2023*

- Supported by Qualcomm FMA Fellowship

National Taiwan University (NTU) — *Taipei, Taiwan*

B.S. in Electrical Engineering — *Sept. 2013 - June 2017*

- **Dean's List Award (2016 Spring):** Ranked 1st out of 185 students

Work / Research Experience

Apple Inc. — *Sunnyvale, USA*

AR/VR Graphics/Multimedia Processing Engineer — *August 2023 - Now*

- Developing graphics pipeline for AR/VR

Google LLC — *Mountain View, USA*

Research Intern — *June 2022 - Sept. 2022*

- Research on sparse-input view synthesis with learned gradient descent

Google LLC — *Mountain View, USA*

Research Intern — *June 2021 - Sept. 2021*

- Research on single-image view synthesis

Facebook, Inc. — *Seattle, USA*

Research Intern — *June 2020 - Sept. 2020*

- Research on video view synthesis

Adobe Inc. — *San Jose, USA*

Research Intern — *June 2019 - Sept. 2019*

- Research on 6-DoF panoramic view synthesis

Center for Visual Computing, UCSD — *San Diego, USA*

Graduate Student Researcher — *Sept. 2018 - June 2023*

- **Advisor:** Prof. Ravi Ramamoorthi
- Research on view synthesis, neural rendering and image-based rendering

Publications & Presentations

Personalized Video Prior for Editable Dynamic Portraits using StyleGAN — *Delft, Netherlands*

Kai-En Lin, Alex Trevithick, Keli Cheng, Michel Sarkis, Ning Bi, Mohsen Ghafoorian, Gerhard Reitmayr, Ravi Ramamoorthi - Computer Graphics Forum (CGF) 2023 — *June 2023*

- Introduced a personalized video prior by optimizing StyleGAN generator to enable editable dynamic portraits.

Neural Free-Viewpoint Relighting for Glossy Indirect Illumination — *Delft, Netherlands*

Nithin Raghavan, Yan Xiao, **Kai-En Lin**, Tiancheng Sun, Sai Bi, Zexiang Xu, Tzu-Mao Li, Ravi Ramamoorthi - Computer Graphics Forum (CGF) 2023 — *June 2023*

- Introduced a hybrid neural-wavelet PRT solution to high-frequency indirect illumination, including glossy reflection, for relighting with changing view.

NerfDiff: Single-image View Synthesis with NeRF-guided Distillation from 3D-aware Diffusion *Hawaii, USA*

Jiatao Gu, Alex Trevithick, **Kai-En Lin**, Josh Susskind, Christian Theobalt, Lingjie Liu, Ravi Ramamoorthi - International Conference on Machine Learning (ICML) 2023 *July 2023*

- Introduced NeRF-guided diffusion to improve reconstruction quality of single-image view synthesis.

Vision Transformer for NeRF-Based View Synthesis from a Single Input Image *Hawaii, USA*

Kai-En Lin, Lin Yen-Chen, Wei-Sheng Lai, Tsung-Yi Lin, Yi-Chang Shih, Ravi Ramamoorthi - Winter Conference on Applications of Computer Vision (WACV) 2023 *Jan. 2023*

- Introduced a novel representation enabling SOTA performance on single-image view synthesis task.

Deep 3D Mask Volume for View Synthesis of Dynamic Scenes *Montreal, Canada*

Kai-En Lin, Lei Xiao, Feng Liu, Guowei Yang, Ravi Ramamoorthi - International Conference on Computer Vision (ICCV) 2021 *Oct. 2021*

- Introduced a 3D mask volume representation and a new multi-view video dataset to address temporal inconsistency in video view synthesis

NeLF: Neural Light-transport Field for Portrait View Synthesis and Relighting *Saarbrücken, Germany*

Tiancheng Sun*, **Kai-En Lin***, Sai Bi, Zexiang Xu, Ravi Ramamoorthi - Eurographics Symposium on Rendering (EGSR) 2021 *June 2021*

- Introduced a novel representation, NeLF, for portrait view synthesis and relighting

Deep Multi Depth Panoramas for View Synthesis *Glasgow, United Kingdom*

Kai-En Lin, Zexiang Xu, Ben Mildenhall, Pratul P. Srinivasan, Yannick Hold-Geoffroy, Stephen DiVerdi, Qi Sun, Kalyan Sunkavalli, Ravi Ramamoorthi - European Conference on Computer Vision (ECCV) 2020 *Aug. 2020*

- Introduced a novel 3D representation for view synthesis on 360 images

Enhancing the Perception of a Hazy Visual World Using a See-through Head-mounted Device *Beijing, China*

Kai-En Lin, Kuang-Tsu Shih, Homer Chen - International Conference on Image Processing (ICIP) 2017 *Sept. 2017*

- Introduced a novel method to perform haze removal for augmented reality using the perceptual properties of human visual system

Dehazing With a See-Through Near-Eye Display *San Diego, USA*

Kuang-Tsu Shih, **Kai-En Lin**, Homer Chen - International Conference on Multimedia and Expo (ICME) 2018 *July 2018*

- **Best Demo Papers Award:** Demonstrated the implementation of the ICIP paper

Honors & Awards

2016 **Dean's List Award (Top 5% of the class),** Ranked 1/185

2018 **Best Demo Papers Award - ICME 2018,** Dehazing With a See-Through Near-Eye Display

Related Skills

Programming Skills: C++, LaTeX, MATLAB, Linux, Python

Libraries/Tools: PyTorch, OpenCV, OpenGL