

# Zhengfei Kuang

Stanford University

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## EDUCATION

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- **Tsinghua University** 08/2015 - 06/2019
  - *Bachelor of Computer Science & Technology*
    - **Overall GPA:** 3.79/4.0
    - **Mathematics Curriculum:** Linear Algebra(4.0); Numerical Analysis(4.0); Elementary Number Theory(4.0); Stochastic Mathematical Methods(4.0); Discrete Mathematics(4.0).
    - **Computer Science Curriculums:** Fundamental Programming(4.0); Data Structures(4.0); Computer Graphics(4.0); Artificial Intelligence(4.0); Computer Networks(4.0); Operating System(4.0); Digital Image Processing(4.0); Computer Architecture(4.0)
- **University of Southern California** 08/2019 - 05/2022
  - *Master of Computer Science*
    - **Overall GPA:** 4.0/4.0
    - **Curriculums:** Advanced Analysis of Algorithms(4.0); Computer Animation and Simulation(4.0); Augmented, Virtual and Mixed Reality(4.0); Representation Learning: Theory and Practice(4.0).
- **Stanford University** 06/2022 - now
  - *Ph.D. Student of Computer Science Department*
    - **Overall GPA:** 4.0/4.0
    - **Curriculums:** Convex Optimization(4.0); Advanced Reading and Research(4.0).

## POSITIONS

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- **Adobe Inc.** 05/2022 - 08/2022, 06/2024 - 11/2024
  - *Research Intern, Adobe Research*
- **Epic Games.** 06/2023 - 12/2023
  - *Research Intern*
- **University of Southern California** 08/2020 - 05/2022
  - *Research Assistant, USC Institute for Creative Technologies*
- **Snap Inc.** 06/2021 - 11/2021
  - *Research Intern, Creative Vision Group*
- **SRI International** 06/2020 - 09/2020
  - *Research Intern, Center for Vision Technologies*
- **Tsinghua University** 08/2017 - 06/2019
  - *Research Assistant, Computer Science Department*

## TEACHING

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- **University of Southern California** 08/2020 - 05/2022
  - *Teaching Assistant of CSCI 570: Analysis of Algorithms*
- **Stanford University** 09/2023 - 12/2023
  - *Course Assistant of CS148: Introduction to Computer Graphics and Imaging*
- **Stanford University** 01/2024 - 04/2024
  - *Course Assistant of CS205L: Continuous Mathematical Methods with an Emphasis on ML*

- **Buffer Anytime: Zero-Shot Video Depth and Normal from Image Priors**  
*Zhengfei Kuang, Tianyuan Zhang, Kai Zhang, Milos Hasan, Gordon Wetzstein, Fujun Luan, 4 more authors*
  - CVPR 2025. A zero-shot training pipeline that only uses unannotated video dataset to train a video depth/normal estimation model.
- **RelitLRM: Generative Relightable Radiance for Large Reconstruction Models**  
*Tianyuan Zhang, Zhengfei Kuang, Haian Jin, William T. Freeman, Kai Zhang\*, Fujun Luan\*, 6 more authors*
  - ICLR 2025 (Spotlight). A diffusion transformer based large reconstruction model for object relighting. It bypasses the explicit decomposition process from traditional methods and supports object relighting in an end-to-end manner.
- **Collaborative Video Diffusion: Consistent Multi-video Generation with Camera Control**  
*Zhengfei Kuang\*, Shengqu Cai\*, Hao He, Yinghao Xu, Hongsheng Li, Leonidas Guibas, Gordon Wetzstein*
  - NeurIPS 2024. A novel video model that can generate multiple videos of the same scene, given shared text prompt and separate camera trajectories.
- **Stanford-ORB: Real-World 3D Object Inverse Rendering Benchmark**  
*Zhengfei Kuang\*, Yunzhi Zhang\*, Hong-Xing Yu, Samir Agarwala, Shangzhe Wu, Jiajun Wu*
  - NeurIPS 2023 Datasets & Benchmarks Track. An object-centric dataset designed for benchmarking state-of-the-art inverse rendering techniques. The dataset is captured from multiple in-the-wild scenes and a scanning studio.
- **PaletteNeRF: Palette-based Appearance Editing of Neural Radiance Fields**  
*Zhengfei Kuang, Fujun Luan, Sai Bi, Zhixin Shu, Gordon Wetzstein, Kalyan Sunkavalli*
  - CVPR 2023. A color palettes-based NeRF model to achieve intuitive appearance editing on NeRF reconstructed scenes. It supports various types of editing in an interactive GUI.
- **NeROIC: Neural Rendering of Objects from Online Image Collection**  
*Zhengfei Kuang, Kyle Olszewski, Menglei Chai, Zeng Huang, Sergey Tulyakov*
  - ACM SIGGRAPH 2022. A two-stage pipeline based on Neural Radiance Fields and Spherical Harmonics for shape reconstruction and relighting of objects that appear in in-the-wild images.
- **DenseGAP: Graph Structured Dense Correspondence Learning with Anchor Points**  
*Zhengfei Kuang, Jiaman Li, Mingming He, Tong Wang, Yajie Zhao*
  - ICPR 2022 (Oral). A GNN-based neural network which combines global context from anchor points (sparse correspondences with high confidence) and local context from dense feature maps, to generate semantically accurate dense correspondences between image pairs in an efficient manner.
- **Dynamic Facial Asset and Rig Generation from a Single Scan**  
*Zhengfei Kuang\*, Jiaman Li\*, Yajie Zhao, Mingming He, Karl Bladin, Hao Li*
  - ACM SIGGRAPH Asia 2020. An automatic pipeline based on neural models that can generate a high-quality facial asset with multiple expressions and textures given a single scan as input.
- **Probabilistic Projective Association and Semantic Guided Relocalization for Dense Reconstruction**  
*Sheng Yang, Zheng-Fei Kuang, Yan-Pei Cao, Yu-Kun Lai, Shi-Min Hu*
  - ICRA 2019. An advanced ICP algorithm based on probabilistic association method with projective features(RGB-D, semantic)
- **Learning to Reconstruct High-quality 3D Shapes with Cascaded Fully Convolutional Networks**  
*Yan-Pei Cao\*, Zheng-Ning Liu\*, Zheng-Fei Kuang, Leif Kobbelt, Shi-Min Hu*
  - ECCV 2018. An OctNet-based volumetric reconstruction module which can improve the quality of TSDF data by processing its features

## SELECTED COURSE PROJECTS

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- **A GPU Path-Tracing Renderer Based on Nvidia OptiX** 02/2019 - 05/2019  
*Group Leader, Supervised by Associate Prof. Kun Xu*
  - Designed and implemented a rendering pipeline that can render pixels in parallel with the support of OptiX.
  - Designed and implemented a simplified version of the VRay Material.
- **An Ocean Simulator & Physics Engine with Distributed Computing** 07/2018 - 08/2018  
*Group Leader, Supervised by Associate Prof. Kang Chen*
  - Analyzed an ocean simulating method based on Fast Fourier Transformation
  - Designed a physics engine with multiple objects involving buoyancy and collisions
  - Implemented the algorithms mentioned above using the MapReduce framework
- **A Low-Level OS Kernel Fuzzing Tool Based on Syzkaller and kAFL** 04/2018 - 07/2018  
*Group Leader, Supervised by Associate Prof. Yu Chen*
  - Designed and Implemented a low-lever kernel fuzzing tool based on Syzkaller and kAFL
  - Found several elusive bugs in a teaching operating system called Ucore using the tool.
- **A 32-bit MIPS CPU based on FPGA** 10/2017 - 12/2017  
*Group Leader, Supervised by Prof. Weidong Liu*
  - Implemented a CPU using Verilog that supports 50+ MIPS instructions and several extensions (TLB, Uart communication), which is capable of running the operating system Ucore
- **A 3D Shadder based on Ray Tracing, Photon Mapping and Bezier Curves** 05/2017 - 06/2017  
*Individual project, Supervised by Prof. Shimin Hu*
  - Implemented the Ray Tracing algorithm and Photon Mapping using C++ and OpenCV library
  - Rendered various models constructed by the Bezier Surface

## AWARDS

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- Annenberg Fellowship in 2019 08/2019
- Guang-Yao Scholarship in 2018 (top 10%) 10/2018
- Zhang Weiming Scholarship in 2017 (top 10%) 10/2017
- Yixin Scholarship in 2016 (top 10%) 10/2016
- Gold prize in ACM-ICPC 2016 China Provincial Programming Contest 10/2016
- Gold prize in 2013 China National Olympiad in Informatics (within one year of training) 07/2013

## EXTRACURRICULAR ACTIVITIES

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- Leader of Video & Graphic Design Group in the Department of CS 07/2018 - 07/2019
- Member of the Chorus in Tsinghua University 07/2017 - 07/2019
- Volunteer of the 2017 Sport Competition in Tsinghua University 05/2017
- Member of the Student Association in the Department of CS 09/2016 - 06/2017
- Member of the Astronomy Society in Tsinghua University 09/2016 - 06/2017

## SKILLS

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- **Programming Skills:** C++, Python, CUDA, C, C#, Java, Shader, MATLAB.
- **Operating Systems:** Linux and Windows.
- **Tools:** PyTorch, Tensorflow, GNU toolchain, Adobe After Effect/Premiere/Photoshop, Blender, Unity, Maya, UE4.