

Zhengfei Kuang

University of Southern California

Email: zkuang@usc.edu

Website: <https://zhengfeikuang.com>

EDUCATION

- **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 - now
 - *Ph.D. Student of Computer Science Department*
 - **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).

POSITIONS

- **University of Southern California** 08/2020 - now
 - *Research Assistant, USC Institute for Creative Technologies*
- **Snap Inc.** 6/2021 - 11/2021
 - *Research Intern, Creative Vision Group*
- **SRI International** 6/2020 - 9/2020
 - *Research Intern, Center for Vision Technologies*
- **Tsinghua University** 8/2017 - 6/2019
 - *Research Assistant, Computer Science Department*

TEACHING

- **University of Southern California** 08/2020 - now
 - *Teaching Assistant of Course CSCI 570: Analysis of Algorithms*

PUBLICATIONS

- **NeROIC: Neural Rendering of Objects from Online Image Collection**
 - Zhengfei Kuang, Kyle Olszewski, Menglei Chai, Zeng Huang, Sergey Tulyakov
 - Submitted to CVPR 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
 - Preprint. 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

• **A GPU Path-Tracing Renderer Based on Nvidia OptiX**

2/2019 - 5/2019

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**

7/2018 - 8/2018

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**

4/2018 - 7/2018

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

- Annenberg Fellowship in 2019 *8/2019*
- 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 2013 China Provincial Programming Contest *10/2016*
- Gold prize in 2013 China National Olympiad in Informatics (within one year of training) *7/2013*

EXTRACURRICULAR ACTIVITIES

- Leader of Video & Graphic Design Group in the Department of CS *07/2018 - present*
- Member of the Chorus in Tsinghua University *07/2017 - present*
- Volunteer of the 2017 sports meeting in Tsinghua University *05/2017*
- Member of the Student Union in the Department of CS *09/2016 - 06/2017*
- Member of the Astronomy Society in Tsinghua University *09/2016 - 06/2017*

SKILLS

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