
Education

University of Southern California **2020-2025**

Ph.D. in Computer Science (expected in 2025)

University of Southern California **2019-2020**

Master's degree in Computer Science

Research Interests

My research interests are ray casting based volumetric rendering, high quality human facial shading and neural rendering, as well as human body reconstruction, tracking, and rigging. I'm also interested in general problems solving related to computer graphics, computational geometry, and computer vision.

Publication and Conference Attendance

FaceReal: Physically-based Neural Face Shader via Volumetric Lightmaps

First Author, On-submission

- We introduced an affordable learning-based face rendering solution towards production quality, without the prerequisite of skin properties or rendering expertise. Our system takes face geometry with texture maps as input and HDRI image as lighting condition, it renders lifelike photos with pore-level details and accurate shading. In particular, we introduce high-frequency normals and dynamic attention into a neural shader to achieve high-fidelity skin details.

A Featured Preserved Mesh Subdivision Framework for Biomedical Mesh

First Author, Published on 2017 IEEE International Conference on BioInformation and BioEngineering

- This article proposes a feature preserved mesh subdivision framework, to generate a visually sensitive result for preserving edge and vertex geometrical features of biomedical data.

Detection of Imbalanced Vertices in 3D Meshes

Fourth Author, Published on 2016 IEEE International Conference on Digital Home

- This article generalizes the idea of imbalance-oriented corner detection from 2D images to 3D meshes and proposes four algorithms on detection of imbalanced vertices in 3D meshes.

Academic Project

Relightable volumetric Human Teleportation

To propose a human body capture system using RealSense and patterned illumination, which is able to capture, and stream RGB-D fusion model in real time. 06/2019–03/2020

- Built run-time spherical harmonic environment lighting estimation and basic graphics engine.
- Developed iOS application for environmental lighting rendering with ARkit.
- Designed and constructed human body capture rig.
- Implemented multi-view RGB-D capturing system calibration, synchronization and streaming.

Mesh Modeling and Editing in CT and MRI Images-Based Bones Reconstruction

To propose a new framework for bone reconstruction and mesh subdivision by utilizing local regularities-based 2D keypoint detection involved in computer vision and graphics. 07/2015–12/2017

- Designed and implemented 3D keypoint detector on local regularities-based 2D keypoint detection.
- Created an integrated multithread framework for local regularities-based 3D keypoint detection and 3D feature preserved mesh subdivision.
- Published conference paper on 2017 IEEE BIBE hold in Washington D.C., USA.
- Published conference paper on 2016 IEEE ICDH hold in Guangzhou, China.

Real-World Practice

Google Summer of Code 2020 (contributes to CGAL) 05/2020–08/2020

- Provided a solution to make the CGAL interior structure able to be rendered and interactive with a clipping plane for a transparent view.
- Implemented a browser-based rendering pipeline using Socket.io and Three.js based on TCP/IP so that the server-side render graphics instead of clients.

Summer intern at Vision & Graphics Lab, ICT, USC 06/2019–03/2020

- Participated in Relightable volumetric Human Teleportation.
- Explore and prepare for core techniques and later used for FaceReal.

Cisco Networking Academies Program for 2016 NBA Global Game Shanghai 10/2016

- Joined the NBA technique supporting team as a Cisco staff and Octagon technicians to establish and maintain a high-quality network environment for staff, guests, and media.
- Participated in network environment establishment, wiring installation, wireless load planning, and equipment maintenance at Mercedes-Benz Arena.

Volunteer Experience

- Participated in G20 Guangzhou the Second Sherpa Meeting as a conference volunteer.
- Worked as the leader of 113 Chinese volunteers during the 2018 Pyeongchang XXIII Olympic Winter Games and offered various volunteering services for the game.
- Assisted Beijing Organizing Committee for 2022 Olympic and Paralympic Winter Game to organize and contact available volunteers for the Pre-Camp.

Professional Skills

Programming language: Python, C++, MATLAB, Swift

Deep learning: Tensorflow, Pytorch

CG/CV stack: OpenGL, OpenCV, CGAL, OpenMesh, Trimesh

Development stack: Qt, ARkit, RealSense SDK

Graphics Engine: Blender, Maya

Languages: Mandarin Chinese (native), English (professional), Cantonese (limited), Korean (limited), Japanese (limited)