

Hongrui Cai

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## Research Interests

Computer Vision & Graphics: 3D reconstruction, structure-from-motion, geometry learning, image and video generation.

## Education

**University of Science and Technology of China**                      Hefei, China  
Ph.D. in 3D Vision                      Sep. 2021 – Present  
Mentors: Prof. Juyong Zhang.

**University of Science and Technology of China**                      Hefei, China  
M.S. in Data Science                      Sep. 2019 – Jul. 2021  
Mentors: Prof. Juyong Zhang. GPA: **3.85/4.3**

**South China University of Technology** Guangzhou, China  
B.S. in Mathematics and Applied Mathematics Sep. 2015 – Jun. 2019  
Ranking: **1/46**. GPA: **92.15/100**

## Papers

Wanquan Feng, **Hongrui Cai**, Junhui Hou, Bailin Deng, Juyong Zhang. Differentiable Deformation Graph based Neural Non-rigid Registration. *Under Review*, 2022.

**Hongrui Cai**, Wanquan Feng, Xuetao Feng, Yan Wang, Juyong Zhang. Neural Surface Reconstruction of Dynamic Scenes with Monocular RGB-D Camera. *NeurIPS*, 2022.

Xin Huang, Dong Liang, **Hongrui Cai**, Juyong Zhang, Jinyuan Jia. CarPainter: Sketch Guided Interactive Caricature Generation. *ACM MM*, 2022.

Wanquan Feng, Jin Li, **Hongrui Cai**, Xiaonan Luo, Juyong Zhang. Neural Points: Point Cloud Representation with Neural Fields for Arbitrary Upsampling. *CVPR*, 2022.

**Hongrui Cai**, Yudong Guo, Zhuang Peng, Juyong Zhang. Landmark Detection and 3D Face Reconstruction for Caricature using a Nonlinear Parametric Model. *Graphical Models (GMOD)*, 2021.

Wanquan Feng, Juyong Zhang, **Hongrui Cai**, Haoifei Xu, Junhui Hou, Hujun Bao. Recurrent Multi-view Alignment Network for Unsupervised Surface Registration. *CVPR*. 2021.

Yudong Guo, Juyong Zhang, Yihua Chen, **Hongrui Cai**, Zhangjin Huang, Bailin Deng. Real-time Face View Correction for Front-facing Cameras. *Computational Visual Media (CVM)*, 2021.

## Projects

### **Monocular RGB-D based Wound Surface Modeling**

Horizontal research project May. 2022 – Jun. 2022

Based on monocular RGB-D video sequences, proposing a highly automatic algorithm to reconstruct high-fidelity wound surface and then measure the area and depth of the wound.

### **Audio driven Talking Head Synthesis**

Horizontal research project Aug. 2020 – Nov. 2020

Developing a deep learning based head reconstruction baseline (via RGB, RGBD or video input) which utilizes a differentiable rendering technology.

### **Real-time Face View Correction for Front-facing Cameras**

Horizontal research project Sep. 2019 – Oct. 2020

Proposing a fully automatic face view correction system based on a single RGB(-D) camera to solve video problems of “upward nose” and “big face” caused by the disparity between camera location and face orientation.

## Selected Honors

First-class Academic Scholarships for Postgraduates, by USTC	2019 - 2022
Excellent Undergraduate Thesis Award, by SCUT	2019
Excellent Undergraduate Student, by SCUT	2019

## Academic Talks

Oral presentation in CVM 2021	Apr. 2021
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