Hongrui Cai

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Email: hrcai AT mail.ustc.edu.cn **GitHub**: github.com/RainbowRui **Homepage**: rainbowrui.github.io

Research Interests

Computer Vision & Graphics: 3D geometry processing, point cloud processing, 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

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

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

Xin Huang, Dong Liang, **Hongrui Cai**, Juyong Zhang, Jinyuan Jia. CariPainter: Sketch Guided Interactive Caricature Generation. Proceedings of the 30th ACM international conference on Multimedia **(ACM MM)**, 2022.

Wanquan Feng, Jin Li, **Hongrui Cai**, Xiaonan Luo, Juyong Zhang. Neural Points: Point Cloud Representation With Neural Fields for Arbitrary Upsampling. *IEEE Conference on Computer Vision and Pattern Recognition* **(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**, Haofei Xu, Junhui Hou, Hujun Bao. Recurrent Multi-view Alignment Network for Unsupervised Surface Registration. *IEEE Conference on Computer Vision and Pattern Recognition* **(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 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 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 project Sep. 2019 – Oct. 2020
Proposing a fully automatic face view correction system based on a single RGB camera to solve video calling problems such as "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 - 2021
Excellent Undergraduate Thesis Award, by SCUT 2019
Excellent Undergraduate Student, by SCUT 2019

Academic Talks

Oral presentation in CVM 2021 Apr. 2021