XIAOYAN CONG

Zhejiang University, P.R. China

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EDUCATION

Zhejiang University — Hangzhou, China

B.E.(Honors) in Robotics Engineering, Minor: Mathematics & AI — Sep 2020 – Jun 2024

- Chu Kochen Honors College, GPA: 3.97/4.00
- Research Interest: 3D Computer Vision, Computer Graphics and Generative AI

Hong Kong University of Science and Technology — Hong Kong, China

Exchange Student & Research Intern — Jan 2023 – Jun 2023

- Dean's List, GPA: 3.83/4.00

PUBLICATIONS

1. **Xiaoyan Cong**, Haitao Yang, Liyan Chen, Kaifeng Zhang, Li Yi, Chandrajit L. Bajaj, Qixing Huang "4DRecons: 4D Neural Implicit Deformable Objects Reconstruction from a single RGB-D Camera with Geometrical and Topological Regularizations", Under Review, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2024*
2. **Xiaoyan Cong**, Yue Wu, Qifeng Chen and Chenyang Lei "Automatic Controllable Colorization by Imagination", Under Review, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2024*

RESEARCH EXPERIENCE

The University of Texas at Austin (Department of Computer Science) — Austin, Texas, USA

Research Intern, Supervisor: Prof. Qixing Huang & Prof. Li Yi — Jun 2023 – Nov 2023

4D Neural Implicit Deformable Objects Reconstruction (In submission to CVPR 2024 as the first author)

- Introduced a novel approach *4DRecons* that takes a monocular RGB-D sequence of dynamic objects as input and outputs a complete textured deforming reconstruction.
- Proposed an optimization procedure that enforces the deformation among adjacent frames is as-rigid-as-possible (ARAP) and ensures the topology remains fixed over time.
- Demonstrated that *4DRecons* can handle large deformations and complex inter-part interactions, outperforming state-of-the-art approaches considerably.

Hong Kong University of Science and Technology (Visual Intelligence Lab) — Hong Kong, China

Research Intern, Supervisor: Prof. Qifeng Chen — Feb 2023 – Nov 2023

Automatic Controllable Colorization by Imagination (In submission to CVPR 2024 as the first author)

- Introduced a novel framework for automatic and controllable colorization, enabling iterative editing and modifications.
- Proposed an Imagination Module that utilizes Diffusion Models (ControlNet) to generate multiple reference candidates with similar semantics and structures to a black-and-white input. The optimal reference is composed from all reference candidates by selecting each segment with the most similar DINO feature.
- Devised a Colorization Module that colorizes the black-and-white input under the guidance of the optimal reference.
- Demonstrated our framework's superiority over state-of-the-art methods, achieving controllable and editable colorization, which is non-trivial in the automatic colorization community.

Zhejiang University (the State Key Laboratory of CAD&CG) — Hangzhou, China

Research Intern, Supervisor: Prof. Xiaowei Zhou — May 2022 – Feb 2023

Neural Reconstruction and Novel View Synthesis of Transparent Objects

- Proposed a novel method to reconstruct transparent objects and synthesize novel views.
- Learned a neural implicit SDF field of 3D-varying index of refraction (IOR).
- Introduced a refraction-ray-tracing based volume rendering scheme, adhering to the laws of eikonal light transport..

SELECTED AWARDS AND HONORS

- Chinese National Scholarship (by Ministry of Education of the People's Republic of China, ~Top 0.2%) — 2021
- Excellence Scholarship (by Chu Kochen Honors College, Zhejiang University, ~Top 1%) — 2022
- Chunhui Scholarship (by College of Control Science and Engineering, Zhejiang University, ~Top 1%) — 2023
- Zhejiang Provincial Government Scholarship (~Top 2%) — 2022
- First-prize Scholarship of Zhejiang University (~Top 2%) — 2022
- First-prize of Zhejiang Province in the 13th National College Students Mathematics Competition — 2022

ADDITIONAL INFORMATION

Technical Skills

- C/C++, Python (Pytorch), Matlab, Linux/Windows, MeshLab, Blender, SolidWorks, CoppeliaSim, Multisim

Languages

- Chinese (Native), English (TOEFL 106)

Leadership

- Department Head of Chu KoChen College Student Union

Miscellaneous

- National Second-class Go (Weiqi) Athlete, Saxophone (10-level, Top in Amateur), Piano (8-level)