Haiyang Ying

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Master student at Tsinghua University, Beijing, China

Interests: 3D Scene Reconstruction, Rendering and Understanding

Education

Tsinghua University (THU), Beijing, China — Fall 2021 – Present

- *Master* in Data Science and Information Technology (expected June 2024)
- Research on 3D computer vision, co-supervised by Prof. Lu Fang and Prof. Qionghai Dai
- GPA: 3.96 / 4.0, Rank: 11 / 134

Sun Yat-Sen University (SYSU), Guangzhou, China — Fall 2017 – Spring 2021

- *B.S.* in Electronic Information Science and Technology
- Research on 3D computer vision, supervised by Prof. Yulan Guo
- GPA: 4.0 / 4.0, Rank: 2 / 111

Research Interests

My research interests mainly lie in 3D computer vision, especially in:

- 3D Representation: Geometric Primitive based 3D Modeling (such as Quadrics and CAD)
- 3D Reconstruction: Semantic-aware Multi-View Stereo and Novel View Synthesis
- 3D Understanding: Hierarchical 3D Scene Parsing and Navigation

My goal is to model, reconstruct, and manipuate the 3D world in a more efficient and interpretable manner.

Publications

- **Haiyang Ying**, Baowei Jiang, Jinzhi Zhang, Di Xu, Tao Yu, Qionghai Dai, Lu Fang. "PARF: Primitive-Aware Radiance Fusion for Indoor Scene Novel View Synthesis". The International Conference on Computer Vision (***ICCV 2023***)
- **Haiyang Ying***, Jinzhi Zhang*, Yuzhe Chen, Zheng Cao, Jing Xiao, Ruqi Huang, Lu Fang. "ParseMVS: Learning Primitive-aware Surface Representations for Sparse Multi-view Stereopsis". Proceedings of the 30th ACM International Conference on Multimedia (***ACM MM 2022***).

Research Experience

Semantic-Aware Indoor Scene Reconstruction and Rendering — Sep 2022 – Mar 2023

- Propose a semantic-aware hybrid representation for indoor scene modeling.
- Design a framework for fast indoor scene reconstruction and rendering with RGB-D input.
- Implement the proposed framework based on Instant-NGP to achieve higher-quality rendering.
- Advisor: Prof. Lu Fang and Prof. Qionghai Dai.

Semantic-Aware Sparse View 3D reconstruction — Sep 2021 – Aug 2022

- Propose a semantic-based representation to encode geometry, texture, and visibility of primitives.
- Design a pipeline for multi-view 3D reconstruction under sparse observations.
- Explore the capacity of implicit function for local representation and optimization.
- Advisor: Prof. Lu Fang

Dynamic Vascular 3D Reconstruction (B.S. Thesis) Oct 2020 – Aug 2021

- Propose to model 3D dynamic tissue with implicit representation.
- Design a pipeline for 3D reconstruction with asynchronous multi-view cone-beam CT images.
- Advisor: Prof. Lu Fang and Prof. Yulan Guo

Honors and Awards

Chinese National Scholarship, by Minister of Education of China (**top 2**% of the Grade)	2019, 2020
The First-class scholarship for outstanding students of SYSU	2018, 2019, 2020
The First Prize of Guangdong Province Electronic Design Competition	2018
Honorable Mention of Interdisciplinary Contest in Modeling (ICM)	2019, 2020

Skills and Hobbies

- Programming Languages: Python, C, C++, MATLAB
- Tools/Frameworks: Pytorch, Git, LaTeX, AutoCAD
- Hobbies: I love music and I'm good at singing and playing the harmonica. I also like electronic design, swimming, watching animations and reading novels of variant countries.