

SHIYAO XU

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EDUCATION

Peking University, Wangxuan Institute of Computer Technology 2020 – 2023

M.Sc. in EECS, Computer Applied Technology. Supervised by Prof. Zhouhui Lian.

Dalian University of Technology 2016 – 2020

B.Eng. of Software Engineering (GPA:82.9/100)

PUBLICATIONS & PREPRINTS

FD-3DGS: Flexible Disentangled 3DGS for Scenes Understanding and Manipulation

Shiyao Xu, Junlin Han, Jie Yang. in submission

TL;DR: We utilize the unique properties of SfM point-clouds and expand a semantic branch based on the original 3D Gaussians model to achieve high-quality scene understanding, retrieval, and object manipulation.

DeSRF: Deformable Stylized Radiance Field

Shiyao Xu, Lingzhi Li, Li Shen, Zhouhui Lian. CVPR 2023 Workshop on GCV

TL;DR: We introduce a deformable module and the dilated sampling method into the stylization process to achieve a high-quality, more efficient, and geometrical-learnable stylized NeRF.

Your3dEmoji: Creating Personalized Emojis via One-shot 3D-aware Cartoon Avatar Synthesis

Shiyao Xu, Lingzhi Li, Li Shen, Yifang Men, Zhouhui Lian. SIGGRAPH ASIA 2022 Technical Communication

TL;DR: We present the first 3D avatar stylization model, utilizing only one real face image and one style image as conditions, facilitated by 3DGANs(EG3D).

Dynamic Texture Transfer using PatchMatch and Transformers

Guo Pu, Shiyao Xu*, Zhouhui Lian. Chinese Patent. CN114283181A*

TL;DR: we propose a method to automatically transfer a dynamic text effect to the still text image, using PatchMatch for the first frame generation and Transformers for the img2vid synthesis, combined with a Gaussian weighted average strategy for the detached patches smoothly.

EXPERIENCE

Cybever (remote) Mountain View USA 2023.07 – 2024.05

Research Scientist

- Responsible for surveying and applying mainstream text-to-3D algorithms such as *DreamFusion*, *zero123*, *etc.* to 3D assets creation.
- Introduced semantic information into 3D models, such as NeRF and 3DGaussians. Improved the quality and accuracy of 3D scene understanding and editing. Proposed "*FD-3DGS*" in submission to SIGGRAPH Asia'24.

Tsinghua University Beijing CN 2023.06 – 2023.10

Research Assistant

Supervisor: Prof. Hongwen Zhang and Prof. Yebin Liu

- Proposed to generate a 3D human body from a single image based on *zero123*(ICCV'23) and finetuned the model on THuman dataset.
- Proposed to split the human body into patches based on semantics and generate the full 3D body in blocks for better performance.

DAMO Academy Alibaba Inc. Beijing CN

2021.08 – 2023.06

Research Intern

Supervisor: Lingzhi Li and Dr. Li Shen

- Reproduced *TransGAN*(NIPS'21), *ViTGAN*(ICLR'22), *SwinTransformer*(ICCV'21), etc. for image generation just using Transformers. Made some improvements to the attention mechanism of Transformers for better performance.
- Combined 3DGANs with portrait stylization, proposed the single-image-driven 3D avatar stylization model "*Your3dEmoji*"(SIGGRAPH ASIA'22).
- Proposed a geometry-learnable stylized NeRF model "*DeSRF*"(CVPRW'23).

Wangxuan Institute of Computer Technology, Peking University

2020.05 – 2023.06

Research Assistant

Supervisor: Prof. Zhouhui Lian

Master Thesis: *3D-aware Style Transfer based on Neural Radiance Field*.

- Improved the traditional PatchMatch-based WordArt style transfer method, and performed style transfer on dynamic text effect. Proposed to use PatchMatch combined with Transformers for dynamic sequence generation. Published this texture transfer system as a patent *CN114283181A*.
- Led and developed the idea of the master thesis topic, 3D-aware style transfer, and proposed two models for 3D avatar and scene stylization (SA'22 and CVPRW'23).

AWARDS & SCHOLARSHIPS

Peking University Graduate School Scholarship (¥8,000) 2022

top 5%

Hackathon PKU Competition (¥10,000) 2021

rank 2/30

CMU/CM (Mathematical Competition in Modeling in China) 2018

2nd Prize

TEACHING

T.A. of Elementary Number Theory for undergraduate students, Peking University

Spring 2021

T.A. & R.A. of **SGI** / The Summer Geometry Initiative, MIT

Summer 2023

MISC

- Courses & Projects: GAMES101, GAMES303, CS4600@Utah, Deep Learning System@CMU
- Student Volunteer in SIGGRAPH 2022
- Member of PKU-Women's Football Club
- Champion of Inter-faculty Women's Football Competition in Peking University Cup, 2022-23
- Research interests focus on the intersection of 2D images and 3D vision