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

EDGaussians: Editable 3D Gaussians for Object Manipulation

Shiyao Xu**, Junlin Han, Yebin Liu.* ***SIGGRAPH 2024 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).

An Example-based Dynamic Texture Transfer Method and System

Zhouhui Lian, Guo Pu, **Shiyao Xu***. 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 & TauLab *(remote) Mountain View USA* 2023.07 – present

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 *"EDGaussians"*(submitted to SIGGRAPH'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