SHIYAO XU

✉ xsy9915@gmail.com · ☎ +86 18742585791 · ⚙ 41xu · ⌂ xusy2333.com

EDUCATION

University of Trento   2024 – present

ELLIS *Ph.D.* student in MHUG group. Supervised by Prof. Paolo Rota and Prof. Gül Varol (ENPC).

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. arxiv. 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

Math Magic *Beijing CN*   2024.07 – 2024.09

Research Engineer

- Responsible for Large Reconstruction Models. Explore the new expression (combining triplanes, SDF, differential rendering, mesh refinement etc.) for 3D shape generation with richer details.

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

University of Trento Doctoral Student Scholarship	
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