

# SHIYAO XU

✉ xsy9915@gmail.com · ☎ +39 344-573-8724 · 🌐 41xu · 🏠 xusy2333.com

## EDUCATION

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**University of Trento**, Center for Mind and Brain 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

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### 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.

## WORKING EXPERIENCE

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**Math Magic Beijing CN** 2024.07 – 2024.09

*Research Engineer*

- Responsible for Large Reconstruction Models training. Explore the new expression (combining triplanes, SDF, differential rendering, mesh refinement etc.) for 3D shape generation in jewelry production.

**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.

**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

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Grants from The European High-Performance Computing Joint Undertaking (EuroHPC)	2025.01-2025.04
Grants from Italian SuperComputing Resource (ISCRA)	2025.01-2025.10
Doctoral Student Scholarship from University of Trento	
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

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T.A. of Elementary Number Theory for undergraduate students, Peking University	Spring 2021
T.A. & R.A. of <b>SGI</b> / The Summer Geometry Initiative, MIT	Summer 2023

## MISC

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- Student Volunteer in ECCV 2024
- Student Volunteer in SIGGRAPH 2022
- Reviewer: WACV 2025
- Reviewer: IJCV, TAFFC
- 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