

Xuan Gao

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EDUCATION



University of Science and Technology of China
B.S. in Information and Computational Science

Sep.2017–Jun.2021



University of Science and Technology of China
Ph.D. in Information and Computational Science

Sep.2021–Present
Advisor: Prof. Juyong Zhang

WORK EXPERIENCE



Image Derivative Inc.
Research Intern on Digital Human

Oct.2021–Jan.2023
Mentor: Yudong Guo & Boyi Jiang

- Efficient NeRF Portrait Modeling & Rendering
- Speech Driven NeRF Portrait
- Text to Speech

PUBLICATIONS

- **Reconstructing Personalized Semantic Facial NeRF Models From Monocular Video**
Xuan Gao, Chenglai Zhong, Jun Xiang, Yang Hong, Yudong Guo, Juyong Zhang
SIGGRAPH Asia 2022 (Journal Track)
[paper] [project page]
- **IntrinsicNGP: Intrinsic Coordinate based Hash Encoding for Human NeRF**
Bo Peng, Jun Hu, Jingtao Zhou, Xuan Gao, Juyong Zhang
IEEE Transactions on Visualization and Computer Graphics, 2023
[paper] [project page]
- **FlashAvatar: High-Fidelity Digital Avatar Rendering at 300FPS**
Jun Xiang, Xuan Gao, Yudong Guo, Juyong Zhang
IEEE/CVF Conference on Computer Vision and Pattern Recognition, 2024
[paper] [project page]
- **CosAvatar: Consistent and Animatable Portrait Video Tuning with Text Prompt**
Haiyao Xiao, Chenglai Zhong, Xuan Gao, Yudong Guo, Juyong Guo
[paper] [project page]
- **Facial Landmark Disentangled Network with Variational Autoencoder**
Sen Liang, Zhize Zhou, Yudong Guo, Xuan Gao, Juyong Zhang, Hujun Bao
Applied Mathematics-A Journal of Chinese Universities
[paper]
- **Multi-Modal Digital Human Modeling, Synthesis, and Driving: A Survey**
Xuan Gao, Dongyu Liu, Juyong Zhang
Journal of Image and Graphics (in Chinese)

PROJECTS

- **Efficient NeRF Portrait Modeling and Rendering**
We developed a NeRF based parametric portrait representation, based on NeRFBlendshape and neural rendering, which could be reconstructed in 20 minutes and could render at 100 fps.
- **Speech Driven Talking Portrait Synthesis**
We developed a NeRF based talking portrait system. We leveraged audio Audio BERT and expert models to improve lip-synchronization quality.
- **Voice Cloning with Unconstrained Talking Video**
We developed a pipeline to process unconstrained talking video for voice cloning, including detecting voice activity, recognizing and phonemizing the speech content and then adapting multi-speaker VITS model for the new speaker.

SELECTED HONORS

- National Scholarship (top 2%) *2022*
- Yang Yuanqing Education Fund Scholarship *2023*
- First-class Academic Scholarships for Postgraduates *2021–2023*

TALKS

- CSIAM GDC 2021, Changsha
Talk title: “Facial Landmark Disentangled Network with Variational Autoencoder”
- SIGGRAPH Asia 2022, Daegu
Talk title: “Reconstructing Personalized Semantic Facial NeRF Models From Monocular Video”
- CSIAM GDC 2023, Shanghai
Talk title: “Reconstructing Personalized Semantic Facial NeRF Models From Monocular Video”

SKILLS

- **Programming Language:** Python C C++ CUDA MATLAB
- **Software:** Blender Unity
- **Framework:** OpenMesh PyTorch libigl Eigen
- **Math:** Real/Complex Analysis, Functional Analysis, Differential Geometry, Spline Approximation, Optimization, Numerical Algebra/Analysis/PDE

ACADEMIC SERVICES

- I'm the reviewer of IEEE Transactions on Multimedia (TMM)