Xuan Gao

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🎓 EDUCATION

University of Science and Technology of China *Sep.2017–Jun.2021*
B.S. in Information and Computational Science, School of Mathematics

University of Science and Technology of China *Sep.2021–Present*
Ph.D. in Information and Computational Science, School of Mathematics *Advisor: Prof. Juyong Zhang*

💼 WORK EXPERIENCE

Image Derivative Inc. *Oct.2021–Jan.2023*
Research Intern on Digital Human *Mentor: Yudong Guo & Boyi Jiang*

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

📄 PUBLICATIONS

- **Portrait Video Editing Empowered by Multimodal Generative Priors**
  Xuan Gao, Haiyao Xiao, Chenglai Zhong, Shimin Hu, Yudong Guo, Juyong Zhang
  SIGGRAPH Asia 2024
  [paper] [project page]

- **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 Head Avatar with Efficient Gaussian Embedding**
  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)
  [paper]

📁 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 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 TTS model for the new speaker.

🏆 Selected Honors

- National Scholarship (top 2%)   *2022*
- Yang Yuanqing Education Fund Scholarship   *2023*
- First-class Academic Scholarships for Postgraduates   *2021–2024*

💬 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"

- CVPR 2024, Seattle
  Poster: "High-fidelity Head Avatar with Efficient Gaussian Embedding"

🔧 Skills

- **Programming Language:** Python C C++ CUDA MATLAB

- **Framework:** Diffusers PyTorch OpenMesh libigl

- **Math:**
  - Real/Complex Analysis, Functional Analysis
  - Differential Geometry, Spline Approximation
  - Optimization
  - Numerical Algebra/Analysis/PDE

👥 Academic Services

- I'm the reviewer of TMM, CVMJ, Pacific Graphics and 3DV.