Lizhen Wang 王立祯

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HomePage: https://lizhenwangt.github.io/
Research Interest:3D face/body reconstruction, face tracking, styleGAN/NeRF-based portrait avatar, diffusion-related human body/face generation

EDUCATION

Tsinghua University, Bachelor of Science *Aug 2014- July 2018*
Major in Science of Mathematics and Physics, the Department of Physics
- GPA: 89/100
- Academic Excellence Scholarship of Tsinghua University
- Social Work Excellence Scholarship of Tsinghua University
- First Prize of Hebei Province in Chinese Physics Olympiad in senior high school

Tsinghua University, Ph.D. *Aug 2018- Jun 2023*
Major in Automatic Control Theory, the Department of Automation
- GPA: 3.7/4.0
- Supervisor: Prof. Yebin Liu
- Teaching assistant of Data Structure course

Tsinghua University, PostDoc *Jul 2023- Jul 2024*
- Advised by Prof. Yebin Liu

EXPERIENCES

ByteDance | Data, IC, CV, Virtual Human&AR *Jul 2024- Now*
Research Internship
- 3D face tracking using a single RGB camera or RGB-D camera

Ant Group | Alipay Business Line, IoT Division *May 2020- July 2021 & July 2022- Sep 2022*
Research Internship
- 3D face tracking using a single RGB camera or RGB-D camera

The University of Texas at Austin | Graphics & AI Lab *July 2017- Sep 2017*
Summer Internship
Advisor: Prof. Qixing Huang
- Manifold CNN structure for 3D objects.

PUBLICATIONS

[1] **Lizhen Wang**, Xiaochen Zhao, Yuxiang Zhang, Hongwen Zhang, Tao Yu and Yebin Liu
StyleAvatar: Real-time Photo-realistic Portrait Avatar from a Single Video
ACM SIGGRAPH 2023 Conference Proceedings

[2] **Lizhen Wang**, Zhiyuan Chen, Tao Yu, Chenguang Ma, Liang Li and Yebin Liu

FaceVerse: a Fine-grained and Detail-controllable 3D Face Morphable Model from a Hybrid Dataset
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2022

[3] **Lizhen Wang**, Xiaochen Zhao, Tao Yu and Yebin Liu
NormalGAN: Learning Detailed 3D Human from a Single RGB-D Image
European Conference on Computer Vision (ECCV), 2020

[4] Jingxiang Sun, Bo Zhang, Ruizhi Shao, **Lizhen Wang**, Wen Liu, Zhenda Xie, Yebin Liu
DreamCraft3D: Hierarchical 3D Generation with Bootstrapped Diffusion Prior
International Conference on Learning Representations (ICLR), 2024

[5] Xiaochen Zhao, **Lizhen Wang**, Jingxiang Sun, Ruizhi Shao and Yebin Liu
HAvatar: High-fidelity Head Avatar via Facial Model Conditioned Neural Radiance Field
ACM Transaction on Graphics (ToG), 2023

[6] Yuelang Xu, **Lizhen Wang**, Xiaochen Zhao, Hongwen Zhang and Yebin Liu.
AvatarMAV: Fast 3D Head Avatar Reconstruction Using Motion-Aware Neural Voxels
ACM SIGGRAPH 2023 Conference Proceedings

[7] Yuelang Xu, Hongwen Zhang, **Lizhen Wang**, Xiaochen Zhao, Han Huang, Guojun Qi and Yebin Liu.
LatentAvatar: Learning Latent Expression Code for Expressive Neural Head Avatar
ACM SIGGRAPH 2023 Conference Proceedings

[8] Jingxiang Sun, Xuan Wang, **Lizhen Wang**, Xiaoyu Li, Yong Zhang, Hongwen Zhang, Yebin Liu.
Next3D: Generative Neural Texture Rasterization for 3D-Aware Head Avatars
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2023

[9] Jingxiang Sun, Xuan Wang, Yichun Shi, **Lizhen Wang**, Jue Wang and Yebin Liu
IDE-3D: Interactive Disentangled Editing for High-Resolution 3D-aware Portrait Synthesis
SIGGRAPH Asia (Journal Track), 2022

[10] Shi Yan, Chenglei Wu, **Lizhen Wang**, Feng Xu, Liang An, Kaiwen Guo and Yebin Liu
DDRNet: Depth Map Denoising and Refinement for Consumer Depth Cameras Using Cascaded CNNs
European Conference on Computer Vision (ECCV), 2018

[11] Zhe Li, Zerong Zheng, **Lizhen Wang**, Yebin Liu
Animatable Gaussians: Learning Pose-dependent Gaussian Mapsfor High-fidelity Human Avatar Modeling
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2024

[12] Yuelang Xu, Benwang Chen, Zhe Li, Hongwen Zhang, **Lizhen Wang**, Zerong Zheng, Yebin Liu
Gaussian Head Avatar: Ultra High-fidelity Head Avatar via Dynamic Gaussians
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2024

[13] Xiang Deng, Zerong Zheng, Yuxiang Zhang, Jingxiang Sun, Chao Xu, Xiaodong Yang, **Lizhen Wang**, Yebin Liu. *RAM-Avatar: Real-time Photo-Realistic Avatar from Monocular Videos with Full-body Control*
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2024

[14] Xiaochen Zhao, Jingxiang Sun, **Lizhen Wang**, Jinli Suo, Yebin Liu.
InvertAvatar: Incremental GAN Inversion for Generalized Head Avatars.
ACM SIGGRAPH 2024 Conference Proceedings

[15] Yufan Chen, **Lizhen Wang**, Qijing Li, Hongjiang Xiao, Shengping Zhang, Hongxun Yao, Yebin Liu.
MonoGaussianAvatar: Monocular Gaussian Point-based Head Avatar.
ACM SIGGRAPH 2024 Conference Proceedings

[16] Yuelang Xu, **Lizhen Wang**, Zerong Zheng, Zhaoqi Su, Yebin Liu.
3D Gaussian Parametric Head Model.
European Conference on Computer Vision (ECCV), 2024

PROJECTS EXPERIENCES

3D face morphable model—FaceVerse and 3D face reconstruction

• FaceVerse is a 3D face morphable model from a large face RGB-D dataset and high-fidelity 3D head models. We also present a single-image face 3D reconstruction algorithm based on FaceVerse.
Github: https://github.com/LizhenWangT/FaceVerse

Real-time face tracking using a single RGB/RBG-D camera

• Face tracing using differentiable rendering. The code is optimized to real-time using Jittor & CUDA. The expression-related blendshapes are fitted to the 52 ARKit blendshapes. So we can also drive some animatable head model using this algorithm.
Demo: https://github.com/LizhenWangT/FaceVerse **Fig.4**

2D/3D realistic head avatar (face reenactment)

• Real-time 2D head avatar from a single RGB video using a StyleGAN-based network.
• 3D neural head avatar from a single view or multi-view RGB video using NeRF.
• Talking head (audio-driven head avatar).

3D human body reconstruction from a single RGB-D image

• Data-driven 3D body reconstruction from a single RBG-D image, we optimize the body geometry using the normal map with a GAN network.
Github: https://github.com/LizhenWangT/NormalGAN

LEADERSHIP AND ACTIVITIES

Student Union, Department of Physics | Vice President *Jul 2016 – June 2017*
- Responsible for the life rights and interests of students in our department
- Responsible for the financial management and materials management of the student union

SKILLS

Languages: Chinese, English, Japanese
Programming Languages: C&C++ (OpenGL/CUDA), Python, Java, Matlab
Deep Learning Platforms: PyTorch, TensorFlow

Solid mathematics and physics knowledge
Solid computer programming skills
Github： https://github.com/LizhenWangT