CHUANYU PAN

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EDUCATION

University of California, Berkeley   Aug 2022 – May 2023
Master of Engineering, Visual Computing and Computer Graphics in Computer Science.   **GPA: 4.0/4.0**
Tsinghua University   Aug 2017 – Jul 2022
Bachelor of Engineering, Computer Science and Technology.   **GPA: 3.8/4.0**
Course Highlights: Computer Graphics, Computer Vision, Machine Learning, VR/AR, Parallel Computing, Distributed System

SKILLS

- **Programming Language:** Python(strong), C/C++(strong), C#, Java, JavaScript, LaTeX.
- **Framework & Tool:** Pytorch, OpenCV, CUDA, OpenGL, Blender, Unity3D, Vulkan, 3React, Git, Bash, Android Studio.

EXPERIENCE

3D AI Research Engineer, *Meshy LLC*   Nov 2023 – Present
- Track and apply SOTA **generative models** and **3D representations** for cutting-edge 3D generative modeling.
- Delve into **large data training** for 3D foundation models, as well as improving the model efficiency.
- Field: Diffusion Model, NeRF, Gaussian Splatting | Key tools: Pytorch, C++, CUDA

Research Intern – Neural Rendering & Point Cloud, *Honda Research Institute (HRI)*   Jun 2023 – Nov 2023
- Apply **neural rendering** to LiDAR **point cloud** for 3D street scene reconstruction and forecasting.
- Build the system on **CUDA GPUs** for real-time performance and reach **SOTA accuracy** on 3D reconstruction tasks.
- Advisor: Aolin Xu | Field: 3D Vision, NeRF, LiDAR point cloud | Key tools: Pytorch, OpenCV, CUDA

Student Project Lead – 3D Object Tracking, *FHL Vive Center for Enhanced Reality, UC Berkeley*   Aug 2022 – Jul 2023
- Build **Digital Twin Tracking Dataset (DTTD)** with cutting edge LiDAR and motion capture sensors.
- Developed real-time **mm-error** 3D object tracking and pose estimation that aim for **general AR applications**.
- Advisor: Allen Y. Yang | Field: 3D Object Tracking, SFM, Camera Calibration | Key tools: C++, Pytorch, ARKit, Kinect

Software Engineer Intern - Animation, *Beijing Huiye Technology Company*   Jun 2020 - Sep 2020
- Implemented a system to drive **3D real-time facial animation** by audio input with **Pytorch** and **Unity3d**.
- Applied algorithms to a 3D avatar 'Xiaoyu,' **live-streamed** on Bilibili (Youtube in China) and **attracted 312k viewers**.
- Advisor: Buyu Li | Field: Facial Animation, Multi-modal | Key tools: Pytorch, Unity3d

HIGHLIGHTED WORKS

Crime Reality, *MIT Reality Hackathon 2023*   Jan 2023 (In three days)
- Built a **VR** application on **Quest2/HTC Vive** that helped crime investigation, winning the **second prize** among 70 teams.
- Field: VR development, Web Development, VR design | Key tools: Unity3d, Oculus, HTC Vive, Reactjs.

3D Cartoon Face Reconstruction and Creation, *Jittor Group, Tsinghua*   Dec 2021 - Jul 2022
- Lead research on **3D cartoon face reconstruction** with **semi-supervised learning** and **mesh deformation**.
- Transformed the research to an **automatic avatar creation** API for VR online meetings with **Pytorch** and **WebGL**.
- Advisor: Shimin Hu | Publication: *VRIH* | Field: 3D Reconstruction, VR, Digital Human | Key tools: Pytorch, WebGL

Object Pursuit, *Geometric Computing Group, Stanford*   Mar 2021 - Oct 2021
- Implemented a novel framework for **robots** to search and find 3D objects in real scenes continuously.
- Proposed a novel **object-centric representation** using network weights and reached **SOTA** performance.
- Advisor: Leonidas Guibas | Publication: *ICLR2022* | Field: Representation Learning | Key tools: Pytorch, OpenCV, iThor

Robust 3D Human Reconstruction in Seconds, *3D Vision and Computational Photography Lab*   Aug 2018 - Nov 2019
- Implemented a robust system to **reconstruct 3D human bodies** with fancy clothes **in 3-8 seconds** using **Azure Kinect.**
- Achieved **SOTA performance** on capturing **accurate and detailed** human shapes with **complex cloth structures**.
- Advisor: Yebin Liu | Publication: *CVPR2020* **(oral)** | Field: 3D Reconstruction, Digital Human | Key tools: C++, CUDA

Realistic Graphics Engine, *Graphics and Geometric Computing Group, Tsinghua*   Apr 2019 – Jun 2019
- Built a simple render engine for mesh and parametric surfaces with **photon mapping** and **path tracing** algorithm.
- Enable terrain creation and rendering using OpenGL and OpenCV with self-created shaders and water wave simulation.
- Advisor: Yongjin Liu | Field: Computer Graphics, Rendering | Key tools: C++, Eigen, OpenGL, OpenCV

PUBLICATIONS (* INDICATES THE FIRST AUTHOR)

[1] **Chuanyu Pan***, Guowei Yang, Taijiang Mu, Yukun Lai. "Generating Animatable 3D Cartoon Faces from Single Portraits" in the *Computer Graphics International (CGI)*, 2023 and *Virtual Reality & Intelligent Hardware (VRIH)* Journal.

[2] Weiyu Feng*, Seth Z. Zhao*, **Chuanyu Pan***, Adam Chang, Yichen Chen, Zekun Wang, Allen Y. Yang. "Digital Twin Tracking Dataset (DTTD): A New RGB+Depth 3D Dataset for Longer-Range Object Tracking Applications" in *the IEEE Conference on Computer Vision and Pattern Recognition (CVPR), the 2nd Workshop Challenge on **Vision Datasets Understanding**,* 2023

[3] **Chuanyu Pan***, Yanchao Yang*, Kaichun Mo, Yueqi Duan, and Leonidas J. Guibas. "Object Pursuit: Building a Space of Objects via Discriminative Weight Generation" in ***ICLR****,* 2022

[4] Zhe Li, Tao Yu, **Chuanyu Pan**, Zerong Zheng, and Yebin Liu. "Robust 3D Self-portraits in Seconds" in *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020 (Oral Presentation)

[5] Huang Zixun*, Keling Yao*, Seth Z. Zhao*, **Chuanyu Pan***, Tianjian Xu, Weiyu Feng, and Allen Y. Yang. "Towards Subcentimeter Accuracy Digital-Twin Tracking via An RGBD-based Transformer Model and A Comprehensive Mobile Dataset." *arXiv preprint arXiv:2309.13570* (2023).

[6] **Chuanyu Pan***, Aolin Xu. "LiDARGrid: 3D Opacity Grid from LiDAR for Scene Forecasting" in *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024 (In submission)