Junwei Jiang

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Education

Technical University of Munich Jun. 2024 – Now
Ph.D. Candidate - Chair of Computer Graphics and Visualization Munich, DE

- **Supervisor**: Prof. Dr. Rüdiger Westermann
- **Research Topic**: Neural Rendering, 3D Gaussian Splatting

Technical University of Munich Sep. 2023 – Jan. 2024
Research Assistant - Chair of Aerodynamics and Fluid Mechanics Munich, DE

- **Supervisor**: PD Dr.-Ing. habil. Xiangyu Hu
- **Research Topic**: GPU Acceleration for Multi-physical SPH Simulations

Sichuan University Sep. 2020 – Jun. 2023
Master of Science in Engineering - Computer Science Chengdu, CN

- **Supervisor**: Prof. Dr. Yanci Zhang
- **Courses**: Numerical Calculation, Computer Graphics, Game Architecture, Virtual Reality, etc
- **GPA**: 3.83/4.0 (Top 5%)

Sichuan University Sep. 2016 – Jun. 2020
Bachelor of Science in Engineering - Computer Science Chengdu, CN

- **Courses**: Calculus, Linear Algebra, Probability Statistics, Computer Graphics, Machine Learning, etc
- **GPA**: 3.76/4.0 (Top 4%)

Publications

[1] A Second-Order Explicit Pressure Projection Method for Eulerian Fluid Simulation Jul. 2022
ACM SIGGRAPH / Eurographics Symposium on Computer Animation / Computer Graphics Forum Durham, UK
Junwei Jiang, Xiangda Shen, Yuning Gong, Zeng Fan, Yanli Liu, Guanyu Xing, Xiaohua Ren, Yanci Zhang

[2] Parallel Real-Time Bone Driven Secondary Deformation Based on Clique Coloring May. 2021
Computer Aided Design and Computer Graphics (CAD/CG 2021) Dalian, CN
Yusong Fu, **Junwei Jiang**, Yina Lv, and Yanci Zhang

Skills

Programming: C/C++, Python, C#, LaTeX, Matlab, Linux
Frameworks: CUDA, OneAPI, OpenGL, Vulkan, DirectX, Pytorch, Intel Tbb, OpenVDB, Git
Engines: Unity, Unreal, Blender, 3ds Max
Tools: PhotoShop, Premiere Pro, etc
English: IELTS 6.5

Research Experiences

3D Gaussian Splatting Munich, DE

Real-Time Rendering, Neural Rendering, Deep Learning, 3D Reconstruction Jun. 2024 – Now

- Brief Introduction: Trying to improve 3D Gaussian Splatting, mainly focusing on trying better early initialization methods(ongoing, with great potential); try to combine alternating optimization/multi-grid/MoE with 3D Gaussian Splatting, etc

More Accurate and Fast Eulerian Fluid Simulation [1] Chengdu, CN

Computer Animation, Physics Based Simulation, Fluid Simulation, Parallel Computing, CFD Feb. 2022 - May. 2022

- Brief Introduction: Improving the Reflection Solver by explicitly advecting pressure gradient. The computational overhead is reduced to half while retaining its time accuracy.
- Main Responsibilities: Build the parallel Eulerian fluid simulation engine with CUDA and Compute Shader; Reproduce some mainstream algorithms and analyze the problems of them; Propose solutions and implement them with code; Carry out comparative experiments, analysis and chart making; Paper writing.

Parallel Real-Time Soft Body Simulation [2] Chengdu, CN

Computer Animation, Physics Based Simulation, Soft Body Simulation, Parallel Computing Jan. 2021 - Jun. 2021

- Brief Introduction: Realize the physical based non-active secondary soft deformation effect by PBD and layered stiffness model. And a new coloring scheme is proposed to solve the physical system in parallel.
- Main Responsibilities: Conceive and implement a new coloring algorithm; Carry out comparative experiments, analysis and chart making; Writing the relevant part of the paper; Partial implementation of Unreal Engine plug-in.

Real-Time Dynamic Diffuse Global Illumination Based on Light Field Probe Chengdu, CN

Real-Time Rendering, Global Illumination, Light Field Probe Sep. 2019 - Mar. 2020

- Brief Introduction: Record the light field information of the scene by light field probes. Use the specially designed algorithm to query and calculate the multiple diffuse reflections.
- Main Responsibilities: Build the rendering pipeline; Reproduce the DDGI algorithm; Build and test the acceptance scene.

Projects

Large Scale Real-Time Fluid Simulation Chengdu & Hangzhou, CN

Computer Animation, Physics Based Simulation, Fluid Simulation, Parallel Computing Jun. 2021 - Feb. 2022

- Brief Introduction: A NetEase pre-research project, which uses mixed Lagrangian particles, Eulerian grids and shallow water equation height fields to achieve a compromise between performance and accuracy.
- Main Responsibilities: Build the parallel Eulerian fluid simulation engine with CUDA and Compute Shader; Reproduce some mainstream algorithms; Mix grids and particles; Simple flow visualization; Export data for reconstruction and rendering.

Real-Time Remote Assistance System Based on Hololens Chengdu, CN

VR / AR, Affine Transformation, Network Transmission, Remote Collaboration Sep. 2020 - Jan. 2021

- Brief Introduction: Develop a remote assistance system similar to Microsoft Dynamics 365. With the help of Hololens, guidance experts in different places can share the screen with front-line engineers remotely and in real time, and give instructions on the screen to achieve the function of remote assistance.
- Main Responsibilities: Draw and serialize instructions on the expert side; Display instructions at the correct position on the engineer side.

Honors and Awards (Selected)

National Inspirational Scholarship - Dec. 2019 & 2018 & 2017

Comprehensive Second Class Scholarship of Sichuan University top 4% students in SCU - Nov. 2018

Comprehensive Third Class Scholarship of Sichuan University top 9% students in SCU - Nov. 2019 & 2017

Outstanding Postgraduate Student of Sichuan University - Oct. 2021

Outstanding Student of Sichuan University - Jun. 2017