Haoyang Wu

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Education

Nanjing University — Nanjing, Jiangsu, PRC
Computer Technology (Non Degree Awarded) — Sep. 2023 – Sep. 2024

Shandong University — Jinan/Qingdao, Shandong, PRC
B.Eng. in Computer Science and Technology — Sep. 2019 – Jun. 2023

Academic Experience

The University of Texas at Dallas — Dallas, Texas, USA
Remote Research Intern (Supervisor: Prof. Xiaohu Guo) — Aug. 2024 – Present
Topic: Reconstruct mesh from SDF by training a neural network to optimize the sample positions and radii.
Responsibilities: Algorithm design; Prototyping; System implementation; Empirical analysis.

Nanjing University — Nanjing, Jiangsu, PRC
Graduate Student (Supervisor: Prof. Ruoyu Yang) — Feb. 2024 – July. 2024
Study of physics simulation: Incremental Potential Contact; Yarn-level Cloth; Iterative Methods.

Independent Projects

Physics Based Renderer | C++ — 2024
Feature: ray tracing; diffuse, metal, dielectrics materials.

Material Point Methods (MPM) for Snow Simulation | C++, CUDA — 2024
Achieved a GPU-accelerated realistic 3D snow simulation by implementing MPM with CUDA.
Features: PIC, FLIP, APIC; BSpline interpolation; Explicit integration; Real-time, offline rendering.

Incompressible Eulerian Fluid Simulation | C++ — 2024
Achieved a realistic 2D smoke simulation in free air using the Eulerian method.
Features: Semi-Lagrangian advection; Marker-and-cell method; Incompressible assumption.

Finite Element Method & Mass-spring System for Elastic Simulation | C++ — 2024
Achieved a interactive elastic 3D simulation without contact
Features: Semi-implicit integration, Newton's method for optimization; High-resolution rendering for low-resolution simulation via skinning.

Geometry Modeling and Processing Algorithms Implementation | C++, Houdini — 2024
Topics: *Poisson surface reconstruction* on regular grid; *Registration* using rigid matching; Computational acceleration using *BVH*; *Heat method* for geodesic distance estimation; Laplacian harmonic functions on mesh; Basic combinatorial mesh and discrete exterior calculus operators.

Metamorphic Testing of Satisfiability Modulo Theories (SMT) Solvers | Python — 2023
Reproduced results from two relevant top papers in a unified way by implementing the automatic testing code where the core component is the interpreter of a domain-specific language (DSL) I designed.

Services

DEI Community Support — Online, PRC
Volunteer, Editor of ftm.wiki & mtf.wiki — Oct. 2021 – Present
I helped to (1) Raise funds for a non-profit organization that advanced a more transgender-inclusive law and advocated for attention to school bullying in China; (2) make healthcare information more accessible for Chinese transgender people.

Winter Computer Science Course for Women — Online, PRC
Organizer, Lecturer — Jan. 2021 – Mar. 2021
I designed a more accessible and attractive material and taught it to female students from non-science background. It received positive feedback and inspired some students to explore CS more.

Network Management Committee — Qingdao, Shandong, PRC
Student Member — Oct. 2020 — Dec. 2021
I was responsible for: (1) record students' and parents' problems and coordinate with staff to solve them; (2) replace the dormitory routers.

SKILLS

Programming: C/C++, Python, CUDA, Matlab; CMake, Git.

Software & Library: Blender, Houdini; Eigen, libigl, CGAL, PyTorch.

HONORS AND AWARDS

Academic Scholarship (top 10% - 15%) 2020 – 2024
Shandong University & Nanjing University

First Prize, Provincial (top 2%) 2021
Contemporary Undergraduate Mathematical Contest in Modeling