

Qianfan Shen

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 Qianfan Shen |  qianfanshen

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OBJECTIVE

I am a third-year undergraduate at Peking University, majoring in Computer Science and Technology. My current research focuses on computer graphics and 3D vision, with a particular interest in **high-quality reconstruction**, **photorealistic simulation**, **neural representation**, as well as engaging interdisciplinary applications of modern graphic and vision techniques. I am actively seeking opportunities to collaborate with researchers in these areas, where I can further develop my expertise and contribute to cutting-edge research.

EDUCATION

- **Peking University** Sep 2022 - Now
B.S., Computer Science and Technology Beijing, China
 - **GPA:** 3.659/4.000 (86.5/100)
 - **Honours and Awards:** Shenzhen Stock Exchange Scholarship; Lee Wai Wing Scholarship; Award of Academic Excellent; Merit Student
 - **Relevant Courses:** Algorithm Design and Analysis, Introduction to Visual Computing and Interaction, Introduction to Computer Systems, Introduction to Discrete Mathematics, The Frontier of Gemotry Computing, Probability Theory and Statistics in Information Science, Digital Image Processing

RESEARCH EXPERIENCE


- **Visual Computing and Learning Lab (VCL)**  May 2024 - Now
Research Assistant, Supervised by Prof. Wenzheng Chen and Prof. Baoquan Chen Beijing, China
 - Participated in projects focused on downstream applications and algorithms of 3D/4D reconstruction methods, particularly based on **NeRF**, **NeuS**, and **3D Gaussian Splatting**.
 - Conducted comprehensive literature review and analysis on state-of-the-art 3D/4D neural rendering and scene representation techniques.
 - Reproduced algorithms from key representative papers on geometry reconstruction, contributing to the validation and understanding of cutting-edge methods in the codebase of the lab.
 - Leading projects on fire synthesis with physically-based gaussian splatting
- **RainyGS: Efficient Rain Synthesis with Physically-Based Gaussian Splatting**  Aug 2024 - Nov 2024
Under review for publication Beijing, China
 - Led the modelling and reconstruction of 3D scenes, including outdoor scenes and Waymo autonomous driving scenes for physical simulation. Specifically responsible for both appearance and geometry reconstruction, integrating the two components into a unified framework.
 - Developed algorithms for generation of auxiliary mesh-based height maps from the geometry reconstruction to simulate shallow water waves.
 - Reproduced baseline models (not open source) for algorithm comparison purposes to evaluate performance.

PUBLICATIONS

C=CONFERENCE, J=JOURNAL, P=PATENT, S=IN SUBMISSION, T=THESIS

[S.1] Qiyu Dai*, Xingyu Ni*, **Qianfan Shen**, Mengyu Chu, Wenzheng Chen, Baoquan Chen. **RainyGS: Efficient Rain Synthesis with Physically-Based Gaussian Splatting**. Accepted to CVPR2025.

INTERNSHIP

- **DXC Technology**  July 2024 - Oct 2024
Software Developing Intern Hybrid
 - Participated in the software development of a compliance system for a corporate client, contributing to the design and implementation of key features.
 - Developed and wrote scripts using PostgreSQL and JavaScript to enable efficient rule queries, enhancing the system's functionality.
 - Assisted in system testing and data comparison, ensuring the accuracy and reliability of the compliance processes.

SELECTED PROJECTS

- **An Integrated Geometric Processing Demo**

May 2024 - June 2024

Tools: [Python, Open3D]



- Laplace Mesh Smoothing: Applied Laplace smoothing to improve mesh quality by reducing irregularities.
- Mesh Simplification Using Quadratic Error Metrics (QEM): Implemented a mesh simplification algorithm based on QEM to reduce the complexity of 3D meshes while preserving their shape.
- Tutte Embedding for Mesh Parameterization: Utilized the Tutte Embedding method for mesh parameterization to map 3D surfaces onto a 2D plane.
- Mesh Deformation Using ARAP (As-Rigid-As-Possible): Applied the ARAP algorithm to deform 3D meshes while maintaining rigid structure as much as possible.

- **The Visualization of the Twenty-Four Histories' Publishing and Collection**

Oct 2024 - Jan 2025

Tools: [D3.js, CSS, HTML]



- Ancient Texts Data Collection and Processing.
- Web Framework Development: Developed the overall structure of the project's web framework, ensuring seamless data integration and presentation.
- Visualization Narrative Design: Led the creation of the complete visualization narrative, organizing the data flow and content presentation to enhance the user experience and data interpretation.
- Design and Implementation of Visual Elements: Designed and implemented key visual elements, including the project's cover page, introduction, line charts, and collection maps, ensuring they effectively communicated the project's data insights.

SKILLS

- **Programming Languages:** Python, PyTorch, C, C++, SQL, JavaScript
- **Languages:** Chinese, English(**TOEFL IBT: 107/120**; CET-6: 671/710), French(a little bit)
- **DevOps & Version Control:** Git
- **Database Systems:** MySQL, PostgreSQL

HONORS AND AWARDS

- **Shenzhen Stock Exchange Scholarship**

Nov 2024

Peking University

- **Merit Student**

Nov 2024

Peking University

- **Lee Wai Wing Scholarship**

Dec 2023

Peking University

- **Award of Academic Excellents**

Dec 2023

Peking University

- **First Place Nationally**

Nov 2023

The 2nd KPMG ESG Case Analysis Competition, KPMG, Renmin University of China

- **Champion and Team Captain**

Apr 2024, Nov 2023

Peking University Cup Tennis Tournament, Peking University Freshman Cup Tennis Tournament