Qi Zhang

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Education

University of Science and Technology of China Hefei, China
B.S. in Information & Computational Science(math), School of the Gifted Young. *09.2019 - 06.2023*
GPA: 90.57/100. **Rank:** 3/43 *with distinction*

Interests

I am interested in graphics, 3d vision and geometric processing, or precisely, highly efficient rendering methods for 3d reconstruction and generative models for rich content creation for VR/AR.

Research

Summer Geometry Institute, Massachusetts Institute of Technology. *Summer 2022*

- Normal estimation of point clouds: we tried improving traditional PCA with MLS method, as well as modern machine learning methods. (supervisor: Micheal Kazhdan(JHU))
- Replicate techniques of plane detection and symetry detection on point clouds with PointNet.
- Minimal current for line draw vectorized A new drawing method with minimal current, using idea from physical simulation of soap babble, minial surface (supervisor: Edward Chien and Mikhail Bessmeltsev).

USTC 3DV Group *Fall 2021 - Present*
Advisor: Prof. Juyong Zhang (Department of Mathematical Science, USTC)

- Learnt basics in 3D reconstruction, SLAM and NeRF, help with handling data and running experiments, and reading papers.

Reformulation of Maxwell's Equations *Winter 2020*
Advisor: Prof. Xiaopin Tao(Physics Experiment and Teaching Center, USTC).

- Rewrote Maxwell's equations in differential forms and understood the meaning behind it via de Rham theory, and gave further discussions on magnetic monopole. Summarized with a paper and gave a presentation.

Projects

- **Numerical Analysis**: Non-linear equation(s) solver, linear equations solver(LU, Cholesky, QR decomposition, Gauss-Seidel), numerical integration, differentiation, numerical ODE and PDE.
- **Graphics**: Shape deformation (ARAP, laplacian), image editing (Poisson editing, panorama stitching, filters, seamless resizing), CAGD (Bezier's curve, B-spline, OpenGL, subdivision).
- **3D Vision**: MVS(SfM), NeRF.

Services

- **Differential Geometry** MATH3009.02 *Fall. 2022*
  Teaching Assistant at USTC (100+ students) by Prof. Yongbin Zhang.
  Geometric properties of curves and surfaces in $\mathbf{R}^3$ and beyond.

Scholarships

- National Scholarship of China (2%), Ministry of Education, China. *2022*
- SGI Research Fellowship (USD $ 4000), Massachusetts Institute of Technology. *2022*
- Outstanding Student Scholarship (Grade 2, 10%). *2020, 2021*
- Outstanding Freshman Scholarship(Grade 3, 20%). *2019*

Skills

Natural Languages: Mandarin(native), English(fluent).
Programing Languages: C, C++11, python, javascript.
Frameworks: Torch, Qt, opengl, imgui, eigen, opencv, taichi, mitsuba3, electron.
Miscellaneous: LaTeX, cmake/make, git, neovim, archlinux, bash(zsh, fish).