

# Qi Wang

Homepage: [wq1998.github.io](http://wq1998.github.io)

Address: Hefei, Anhui, 230026, P.R.China

Mobile: (+86)18856020396

Email: [wq2014@mail.ustc.edu.cn](mailto:wq2014@mail.ustc.edu.cn)

## EDUCATION

---

- **University of Science and Technology of China** Hefei, Anhui, China  
*Ph.D in Computational Mathematics, School of Mathematical Sciences* *Sep. 2018 - Present*
  - **Research interest:** Geometry Processing, Numerical Optimization, Topology Optimization
  - **Supervisor:** Prof. Ligang Liu & A.P. Xiao-Ming Fu
- **University of Science and Technology of China** Hefei, Anhui, China  
*B.S. in Computational Mathematics, School of the Gifted Young* *Sep. 2014 - Jun. 2018*
  - **Research interest:** Computer Graphics
  - **Supervisor:** Prof. Ligang Liu

## RELEVANT COURSEWORK/ SKILLS

---

- **Graphics:** Computer graphics, Computer aided geometric design, Digital geometry processing.
- **Mathematics:** Spline function and approximation theory, Numerical analysis, Probability theory and mathematical statistics, Differential geometry, Algorithms, Convex optimization.
- **Programming Skills:** C++, C, Matlab, Mathematica, Python, L<sup>A</sup>T<sub>E</sub>X.
- **Software:** Autodesk Fusion 360, Rhino.

## HONORS AND AWARDS

---

- Outstanding new student award for overseas alumni, USTC - 2014
- Outstanding student scholarship, USTC - 2016
- Chiang Chen Scholarship, USTC - 2018, 2019

## PUBLICATIONS

---

- **Differentiable Microstructures Design Based on Implicit Tensor Product B-spline**  
**Qi Wang**, Xiaoya Zhai, Falai Chen  
(In preparation)
- **Shape Optimization from Skeletons via Anisotropic Thermal Diffusion**  
**Qi Wang**, Xiaoya Zhai, Qing Fang, Ligang Liu, Xiao-Ming Fu  
submitted to Symposium on Solid and Physical Modeling. (Under review)
- **A Large-Scale Benchmark for 3D Geometric Constraint Solvings with Different Numerical Optimization Methods and Variable Representations**  
**Qi Wang**, Zhi-Quan Hu, Yu-Chen Quan, Chunyang Ye, Xiao-Ming Fu  
(In preparation)
- **Practical Construction of Globally Injective Parameterizations with Positional Constraints**  
**Qi Wang**, Wen-Xiang Zhang, Yuan-Yuan Cheng, Ligang Liu, Xiao-Ming Fu  
Computational Visual Media, 9(2), 2023.
- **Untangling All-Hex Meshes via Adaptive Boundary Optimization**  
Qing Huang, Wen-Xiang Zhang, **Qi Wang**, Ligang Liu, Xiao-Ming Fu  
Graphical Models (CVM), 2022.
- **Constrained Remeshing Using Evolutionary Vertex Optimization**  
Wen-Xiang Zhang, **Qi Wang**, Jia-Peng Guo, Shuangming Chai, Ligang Liu, Xiao-Ming Fu  
Computer Graphics Forum (Eurographics), 41(2), 2022.
- **Interactive Editing of Discrete Chebyshev Nets**  
Rui-Zeng Li, Jia-Peng Guo, **Qi Wang**, Shuangming Chai, Ligang Liu, Xiao-Ming Fu  
Computer Graphics Forum (Eurographics), 41(2), 2022.

- **Differentiable Microstructures Design Based on Implicit Tensor Product B-spline**

*Graduate Research*

- **Content:** Parameterized microstructures are generated by an implicit surface, which is expressed by a tensor-product B-spline function. We optimize the coefficients of the basis functions to get the final structures.
- **Supervisor:** Prof. Falai Chen & A.P. Xiaoya Zhai

- **Shape Optimization from Skeletons via Anisotropic Thermal Diffusion**

*Graduate Research*

- **Content:** We propose a novel method to optimize 2D shapes from skeletons. Central to our algorithm is a new representation of the mapping from the skeleton to the shape, formulated as the anisotropic thermal diffusion. We apply our optimization framework to design differential microstructures and macroscopic porous structures.
- **Supervisor:** Prof. Ligang Liu & A.P. Xiao-Ming Fu & A.P. Xiaoya Zhai & A.P. Qing Fang

- **3D Geometric Constraint Solvings in CAD systems**

*Graduate Research*

- **Content:** We apply the Lie algebra into the problem of geometric constraint solvings to replace the commonly-used quaternion representation for rotation to remove the constraint of the unit norm of the quaternion. Experiments show the Lie algebra outperforms the quaternion.
- **Supervisor:** A.P. Xiao-Ming Fu & Dr. Chunyang Ye

- **Practical Construction of Globally Injective Parameterizations with Positional Constraints**

*Graduate Research*

- **Content:** We propose a novel method to compute globally injective parameterizations with arbitrary positional constraints on disk topology meshes. Our method achieves a higher success rate than the state-of-the-art method.
- **Supervisor:** Prof. Ligang Liu & A.P. Xiao-Ming Fu

- **Structural and Positional Optimization of Hex Mesh**

*Graduate Research*

- **Content:** Structural optimization of hex mesh defines some novel topological operations aiming to get a better and more simplified structure. Positional optimization of hex mesh includes an adaptive boundary optimization process, aiming to remove the flips as much as possible.
- **Supervisor:** A.P. Xiao-Ming Fu

- **Dynamic Point Cloud Compression**

*Undergraduate thesis*

*Jun. 2018*

- **Content:** Two methods for dealing with 3D dynamic point cloud compression are presented. The first approach is based on compressed sensing. The second method is the extension of octree clustering to spatiotemporal sequences.
- **Supervisor:** Prof. Ligang Liu

- **Drawing Machine Based on Corexy Structure**

*Final Project on the course Computer graphics*

*May. 2017*

- **Content:** The input image is scanned to draw, and a line or circle is added to the corresponding position of the image to achieve the purpose of rinsing pens and changing pigments.
- **Supervisor:** Prof. Ligang Liu