

# QIAN-YI ZHOU

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## Education

- **Aug. 2005 - Present, Tsinghua University**—Beijing, China  
*M.E. in Computer Science and Technology*
  - GPA: 92.6/100 (overall), 93.3/100 (core), ranked 2nd out of 170 students
  - Projected Graduation Date: Jul. 2007
- **Aug. 2001 - Jul. 2005, Tsinghua University**—Beijing, China  
*B.E. in Computer Science and Technology*
  - GPA: 90.1/100 (overall), 91.8/100 (core), ranked 9th out of 186 students (top 5%)
  - Excellent Graduate of Tsinghua University, 2005.

## Publications

- **Editing The Topology of 3D Models by Sketching**
  - *ACM SIGGRAPH 2007, to appear.*
  - Tao Ju, **Qian-Yi Zhou** and Shi-Min Hu
- **Topology Repair of Solid Models Using Skeletons**
  - *IEEE Trans. Vis. Comput. Graph., Vol 13, pp. 675-685, 2007.*
  - **Qian-Yi Zhou**, Tao Ju and Shi-Min Hu
- **Robust Feature Classification and Editing**
  - *IEEE Trans. Vis. Comput. Graph., Vol. 13, pp. 34-45, 2007.*
  - Yu-Kun Lai, **Qian-Yi Zhou**, Shi-Min Hu, Johannes Wallner and Helmut Pottmann
- **Handling Degenerate Cases in Exact Geodesic Computation on Triangle Meshes**
  - *Computer Graphics International, 2007, to appear.*
  - Yong-Jin Liu, **Qian-Yi Zhou** and Shi-Min Hu
- **Feature Sensitive Mesh Segmentation**
  - *ACM Symp. Solid and Physical Modeling, pp. 7-16, 2006.*
  - Yu-Kun Lai, **Qian-Yi Zhou**, Shi-Min Hu and Ralph R. Martin

## Research

- **Oct. 2005 - Present, OcTree-based topology repair and editing**—CG lab, Tsinghua Univ.

– Advisor: Prof. Tao Ju (Washington University at St. Louis), Prof. Shi-Min Hu (Tsinghua University).

– We study a volumetric method for repairing topological errors on solid models. By using an adaptive grid structure to represent geometry, our method is both robust and efficient.

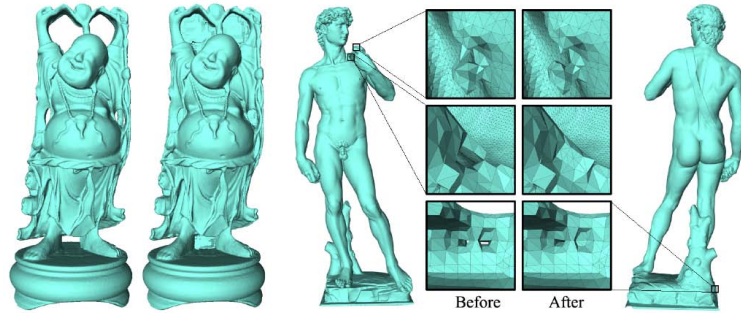


Figure 1: Topology repair.

– Based on the topology repair technique, we developed a user interactive approach to help topology editing. This work will appear on SIGGRAPH 2007, with title: "Editing The Topology of 3D Models by Sketching".

– A software TopoMender based on the proposed algorithm can be found at my homepage .

• **Sep. 2004 - Sep. 2005, Feature sensitive geometry processing**—CG lab, Tsinghua Univ.

– Advisor: Prof. Shi-Min Hu (Tsinghua University), Prof. Helmut Pottmann (Vienna University of Technology).

– I mainly researched into isotropic resampling algorithm, isotropic remeshing and hierarchical isotropic remeshing, which are based on the feature sensitive framework, and are fundamental to feature classification, editing and model segmentation. I also helped in writing and modifying papers.



Figure 2: Feature detection.

• **Aug. 2004, Robust repair of polygonal models**—CG lab, Tsinghua Univ.

– Advisor: Prof. Shi-Min Hu (Tsinghua University).

– I researched in mesh construction algorithm from point cloud based on Moving Least Square and OcTree structure inspired by the algorithm in *Robust Repair of Polygonal Models* [Tao Ju, ACM Siggraph 2004] to get crack-free mesh model.

• **Apr. 2004 - Jul. 2004, Point cloud registration**—CG lab, Tsinghua Univ.

– Advisor: Prof. Shi-Min Hu (Tsinghua University), Prof. Helmut Pottmann (Vienna University of Technology).

– I participated in a point cloud registration project, during which I implemented the data structure and construction algorithm for D2Tree and AuxTree.

## Projects

- **Apr. 2005 - Present, Fast 3D registration in F.A. Application**

- Advisor: Prof. Shi-Min Hu (Tsinghua University).

- This is a long-term project which lasts for one year and a half, aiming at the fast 3D registration technology in factory automation application. I am a major member during all the three terms of the project.

- **1st term** (Apr. 2005 - Sep. 2005): we study a fast local registration algorithm based on the second order Taylor approximation by the support of Kinematics theory. We use PCA to achieve global registration, which serves as the input for the local registration algorithm, and a uniform (isotropic) sampling is introduced to further improve the performance.

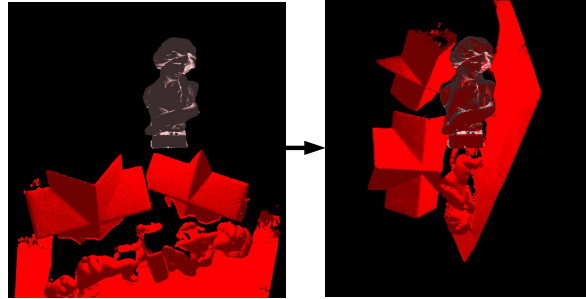


Figure 3: Object-to-scene registration.

- **2nd term** (Oct. 2005 - Mar. 2006): we use integral invariants to analyze features on a point cloud model. By calculating similarity between features, we perform a global registration and achieve patch-to-whole-model registration.

- **3rd term** (Apr. 2006 - Present): we try to improve the performance of the previous project and do some experiments on scanned data from real scenes. Instead of calculating integral invariants, we develop an algorithm to calculate differential invariants on range images, which are as robust as integral invariants but much easier to compute. Furthermore, experiments are done on scanned data, especially for object-to-scene registration.

- **Jul. 2002 - May. 2003, Development of the contest platform for Tsinghua Artificial Intelligence Programming Contest**

- I lead a group of four people to develop a game platform for AI's written by contestants. We designed the program framework, the game rules, and implemented the game engine. The platform is implemented by C#, and supports multiple interfaces for AI's implemented by VC++, Java, C#, Delphi, etc. The whole project lasted for about a year and has been proven to be one of the most successful in the history of the contest, as in the Contest in 2005 and 2006, our framework was inherited and some of the core codes were directly used.

## Skills

- **Programming**

- Proficiency in VC++, C#, ASP. Have project experience. Experience in Delphi/Pascal, Java, x86 Assembly, HTML, SQL, etc. Use Latex and Matlab in research without difficulty.

- **English**

- GRE: Verbal: 410; Quantitative: 800; Analytical Writing: 4.0.

- TOEFL: 597; TWE: 4.5.

## Achievements and Activities

- Feb. 2006 - Present: **President** of the Graduate Student Union, Department of Computer Science and Technology, Tsinghua University.
- Aug. 2005 - Feb. 2006: **Executive Vice President** of the Graduate Student Union, Department of Computer Science and Technology, Tsinghua University.
- Jan. 2003 - Jul. 2004: An important member of the Association of Science and Technology, Department of Computer Science and Technology. One of the organizers of 2003 ACM Regional Contest, Tsinghua Challenge Cup, Tsinghua Artificial Intelligence Programming Contest, etc.
- Jul. 2004 - Present: **Manager** and **captain** of the largest soccer club in our department, won two champions of the soccer league seasons.
- Sep. 2005 - Present: **Captain** of the soccer team of HCI and Media Integration Lab.

## Prizes and Honors

- **Scholarships**
  - Oct. 2006 - Second class Scholarship for Excellent Students in Tsinghua University, 2006.
  - Oct. 2004 - Second class Scholarship for Excellent Students in Tsinghua University, 2004.
  - Oct. 2003 - First class Scholarship for Excellent Students in Tsinghua University (Toshiba Scholarship), 2003.
  - Oct. 2002 - First class Scholarship for Excellent Students in Tsinghua University (Wu Shun-De Scholarship), 2002.
- **Prizes in Contests**
  - Silver medal in Chinese Mathematics Olympic(CMO), 2001.
  - Silver medal in Chinese Mathematics Olympic(CMO), 2000.
  - First Prize in Computer Programming Contest of Jiangsu Province, 2000.
- **Honors**
  - Outstanding Graduate of the Beijing city, awarded by Beijing Municipal Education Commission, 2005.
  - Excellent Graduate of Tsinghua University, 2005.
  - Outstanding B.E. Thesis, 2005.
  - First place in Men's 110 hurdles, Department of Computer Science and Technology, Tsinghua University, 2006.
  - Excellent Student Leadership, Department of Computer Science and Technology, Tsinghua University, 2003.