

Qing Xia (夏 清)

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EDUCATION

Ph.D., Computer Application Technology (Graphics & Geometry)

Advisor: Prof. Aimin Hao (Beihang) and Prof. Hong Qin (Stony Brook University, USA)

State Key Laboratory of Virtual Reality Technology and Systems, Beihang University

Sept. 2012 - Now

Beijing, China

Ph.D. (Honorary), Computer Science

School of Advanced Engineering (Shenyuan Honors College), Beihang University

Honors doctoral program selecting candidates (around 25) in different majors, only 3 in CS

Sept. 2012 - Now

Beijing, China

B.S., Computer Science

School of Computer Science and Engineering, Beihang University

Recommended to the Ph.D. program without exams, top 10%

Sept. 2008 - Jun. 2018

Beijing, China

PROFESSIONAL SKILLS

- Experienced in programming with C/C++, Matlab, Python, etc.
- Expert in computer graphics and OpenGL, GLSL, etc.
- Expert in geometry processing and shape analysis, especially in shape descriptors and deformations
- Familiar with parallel computing and skillful at using CUDA and OpenMP
- Familiar with machine learning techniques, such as SVM, decision trees, neural networks, etc.
- Experienced in implementing algorithms based on research papers and academic writing

AWARDS & HONORS

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| ■ Excellent New Student Award (Top 400 in NCEE in Sichuan) | Sept. 2008 |
| ■ Outstanding Graduate Award (Outstanding at Beihang) | Jun. 2012 |
| ■ National Graduate Scholarship (3 rd place of doctoral students in SCSE at Beihang) | Oct. 2016 |
| ■ Excellent Foundation of BUAA for PhD students (Only 3 in CS) | May 2017 |
| ■ Best Paper Award of ICVRV 2017 | Oct. 2017 |
| ■ Outstanding Academic Paper Award (JCR Q1 paper) | Apr. 2018 |
| ■ First Place Award of Atrial Segmentation Challenge @ MICCAI 2018 | Sept. 2018 |

PROGRAM EXPERIENCE

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| ■ Visual Model and Environment Construction and Its Dynamic Simulation
PI: Prof. Hong Qin
Duty: 3D model analysis and processing and other multi-source data applications related 3D models | Jan. 2016 – now |
| ■ Data Modeling and Interactive Virtual Surgery of Digital Human Organs
PI: Prof. Qiping Zhao and Prof. Aimin Hao
Duty: PCI virtual surgery prototype system and other related techniques | Jan. 2012 - Dec. 2016 |

ACADEMIC ACTIVITIES

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| ■ Made an oral presentation at PG in Beijing, China | Oct. 2015 |
| ■ Made an oral presentation at VRST in Beijing, China | Nov. 2015 |
| ■ Made an oral presentation (CAGD paper) at GMP in San Antonio, USA | Apr. 2016 |
| ■ Made an oral presentation (PCI simulator) at SIGGRAPH Asia in Macau, China | Dec. 2016 |

MAIN PROJECTS

- Real-time simulation and rendering of fluid.
SPH, approximate surface as smoothed depth of particles, add sprays/foams according temporal-spatial analysis.
- Percutaneous Coronary Intervention (PCI) virtual surgery simulator.
Include tissue deformation, catheter and wire simulation, X-ray simulation, haptic feedback, etc.
- Automatic extraction of 3D focal features.
Predict focal features via connections between local features and the distances to them using random forest.
- Fast 3D shape interpolation in modal space.
Bring modal analysis into 3D shape interpolation to restrict solutions in modal space and improve efficiency a lot.
- Spline fitting in shape space.
Fit a hyper-curve in feature space to obtain a smooth sequence of 3D shape in Euclidean space.
- Compression of shape sequence
Compress shape sequence with rich details using piece-wise manifold harmonics and deformation transfer.

PUBLICATIONS

Conference

- **Q. Xia**, S. Li*, H. Qin and A. Hao. Modal Space Subdivision for Physically-plausible 4D Shape Sequence Completion from Sparse Samples. The 23rd Pacific Conference on Computer Graphics and Applications (Pacific Graphics 2015).
- L. Yang, S. Li*, **Q. Xia**, A. Hao and H. Qin. A Novel Analysis-and-Simulation Approach for Detail Enhancement in FLIP Fluid Interaction. The 21st ACM Symposium on Virtual Reality Software and Technology (VRST 2015).
- Z. Xie, S. Li*, **Q. Xia** and A. Hao. Kinetic simulation of cardiac motion with patient-specific coronary artery vessels attached for PCI simulator. International Conference on Virtual Reality and Visualization (ICVRV 2017). **Best Paper Award**.
- X. Tan, X. Peng, L. Liu and **Q. Xia***. Automatic Human Body Feature Extraction and Size Measurement by Random Forest Regression Analysis of Geodesics Distance. International Conference on Virtual Reality and Visualization (ICVRV 2017).
- C. Chen, **Q. Xia**, S. Li*, A. Hao and H. Qin. High-fidelity Compression of Dynamic Meshes with Fine Details using Piece-wise Manifold Harmonic Bases. Computer Graphics International (CGI 2018).
- **Q. Xia***, Y. Yao, Z. Hu and A. Hao. Automatic 3D Atrial Segmentation from GE-MRIs using Volumetric Fully Convolutional Networks. International Workshop on Statistical Atlases and Computational Models of the Heart (STACOM @ MICCAI 2018, **rank 1st** in Atrial Segmentation Challenge)

Journal

- S. Li, **Q. Xia**, A. Hao*, H. Qin and Q. Zhao. Haptics-Equipped Interactive PCI Simulation for Patient-Specific Surgery Training and Rehearsing. SCIENCE CHINA Information Sciences, (2016) 59: 103101.
- **Q. Xia**, S. Li*, H. Qin and A. Hao. Automatic Extraction of Generic Focal Features on 3D Shapes via Random Forest Regression Analysis of Geodesics-in-Heat. Computer Aided Geometric Design, 49: 31-43, December 2016.
- Y. Qiu, L. Yang, S. Li*, **Q. Xia**, H. Qin and A. Hao. Novel Fluid Detail Enhancement based on Multi-Layer Depth Regression Analysis and FLIP Fluid Simulation. Computer Animation and Virtual Worlds, 2017, 28(5).
- X. Tan, X. Peng, L. Liu and **Q. Xia***. Automatic Human Body Feature Extraction and Personal Size Measurement. Journal of Visual Languages and Computing, 2018, 47: 9-18.
- S. Li, Z. Xie, **Q. Xia**, A. Hao* and H. Qin. Hybrid 4D Cardiovascular Modeling based on Patient-Specific Clinical Images for Real-time PCI Surgery Simulation. Graphical Models, to appear.
- **Q. Xia**, C. Chen, S. Li*, A. Hao and H. Qin. Fast 4D Shape Sequence Completion from Sparse Samples via Spline Fitting in Linear Rotation Invariant Space. Graphical Models. (Under review)
- C. Chen, **Q. Xia**, S. Li*, H. Qin and A. Hao. Compressing Animated Meshes with Fine Details using Local Spectral Analysis and Deformation Transfer. The Visual Computer. (Under review)