

# Qing Xia (夏 清)

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## EDUCATION

Ph.D., Computer Application Technology

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

State Key Laboratory of Virtual Reality Technology and Systems

School of Computer Science and Engineering, Beihang University

Sept. 2012 - Now

Beijing, China

Ph.D. (Honorary), Computer Science

School of Advanced Engineering, Beihang University

An elite program, selected from candidates (around 25) in different majors, only 3 in CS

Sept. 2012 - Now

Beijing, China

B.E., Computer Science

School of Computer Science and Engineering, Beihang University

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

Sept. 2008 - Jun. 2012

Beijing, China

## PROFESSIONAL SKILLS

- Experienced in programing 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

- Excellent New Student Award (Top 400 in NCEE in Sichuan) Sept. 2008
- Outstanding Graduate Award (Outstanding at Beihang) Jun. 2012
- National Graduate Scholarship (3<sup>rd</sup> place of doctoral students in SCSE at Beihang) Oct. 2016
- Excellent Foundation of BUAA for PhD students (Only 3 in CS) May 2017

## PROGRAM EXPERIENCE

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

## ACADEMIC ACTIVITIES

- Attended SIGGRAPH Asia in Shenzhen, China Dec. 2014
- Made an oral presentation on PG in Beijing, China Oct. 2015
- Made an oral presentation on VRST in Beijing, China Nov. 2015
- Made an oral presentation (CAGD paper) on GMP in San Antonio, USA Apr. 2016
- Made an oral presentation (PCI simulator) on 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  
A PCI simulator including 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 focal features 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.
- Regional descriptor of 3D shape  
We use a center point and a distance range to define a local region based on bi-harmonic distance, and describe this region by integration of global shape information, feature structure and 3D shape context.

## 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 2018.

### 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).
- 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. (Under review)
- X. Tan, X. Peng, L. Liu and **Q. Xia**\*. Automatic Human Body Feature Extraction and Personal Size Measurement. JVLC. (Under review)
- **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. CAD. (Under review)
- **Q. Xia**, S. Li\*, H. Qin and A. Hao. A Regional Descriptor for Partial Shape Retrieval Integrated with Intra-structure of Features and 3D Shape Context. TVCG. (In preparation)