Qing Xia (夏 清)

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EDUCATION

Ph.D., Computer Application Technology (Graphics & Geometry)   Sept. 2012 - Now

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

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

Ph.D. (Honorary), Computer Science   Sept. 2012 - Now

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

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

B.S., Computer Science   Sept. 2008 - Jun. 2012

School of Computer Science and Engineering, Beihang University   Beijing, China

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

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

- Excellent New Student Award (Top 400 in NCEE in Sichuan)   Sept. 2008
- Outstanding Graduate Award (Outstanding at Beihang)   Jun. 2012
- National Graduate Scholarship (3rd 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

- Visual Model and Environment Construction and Its Dynamic Simulation   Jan. 2016 – now
  PI: Prof. Hong Qin
  Duty: 3D model analysis and processing and other multi-source data applications related 3D models

- Data Modeling and Interactive Virtual Surgery of Digital Human Organs   Jan. 2012 - Dec. 2016
  PI: Prof. Qinping Zhao and Prof. Aimin Hao
  Duty: PCI virtual surgery prototype system and other related techniques

ACADEMIC ACTIVITIES

- 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.
- **Regional descriptor of 3D shape.**
  Integrate global shape information, feature structure and shape context, bi-harmonic distance based region.
- **Compression of shape sequence**
  Compress shape sequence with rich details using piece-wise manifold harmonics and deformation transfer.

PUBLICATIONS

Conference

- <u>**Q. Xia**</u>, 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[*], <u>**Q. Xia**</u>, 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[*], <u>**Q. Xia**</u> 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 <u>**Q. Xia**</u>[*]. 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, <u>**Q. Xia**</u>, 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).
- <u>**Q. Xia**</u>[*], 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, <u>**Q. Xia**</u>, 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.
- <u>**Q. Xia**</u>, 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[*], <u>**Q. Xia**</u>, 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 <u>**Q. Xia**</u>[*]. Automatic Human Body Feature Extraction and Personal Size Measurement. Journal of Visual Languages and Computing, 2018, 47: 9-18.
- S. Li, Z. Xie, <u>**Q. Xia**</u>, 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.
- <u>**Q. Xia**</u>, 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, <u>**Q. Xia**</u>, 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)