

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 (3rd 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. Qiping 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
- Attended PG and made an oral presentation in Beijing, China Oct. 2015
- Attended VRST and made an oral presentation in Beijing, China Nov. 2015
- Attended GMP and made an oral presentation (CAGD paper) in San Antonio, USA Apr. 2016
- Attended SIGGRAPH Asia and made an oral presentation (PCI simulator) in Macau, China Dec. 2016

MAIN PROJECTS

- Real-time simulation and rendering of fluid
We simulate the fluid with SPH method, use the smoothed depth map of particles as fluid surface, compute the optical effect based on this approximated surface and add sprays, foams according temporal-spatial analysis.
- PCI virtual surgery simulator
We develop a simulator to simulate the entire process of Percutaneous Coronary Intervention (PCI), including tissue deformation, catheter and wire simulation, X-ray simulation, haptic feedback, and 3D realistic rendering.
- Automatic extraction of 3D focal features
We make the first attempt to encode user intention into feature extraction of 3D shape, which is achieved via building connections between local features and the distances to focal features using random forest.
- Fast 3D shape interpolation in modal space
We firstly bring modal analysis into 3D shape interpolation, in which the deformations of 3D shape are restricted in a very small modal space and the efficiency is improved a lot.
- Spline fitting in shape space
We convert the 3D shapes into feature space via linear invariant coordinates, and fitting a hyper-curve in this 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).
- 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).
- 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. GMP 2018. (In preparation)

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).
- 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)