XIA QING (夏 清)

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Education

- **State Key Lab of VR Technology and Systems, Beihang University** — Beijing
  Ph.D. of Computer Science, Supervisor: Prof. Aimin Hao and Prof. Hong Qin — *Sept. 2012 – Nov. 2018*
  - Geometry Processing & Analysis, Real-time Rendering, Parallel Computing, Virtual Surgery Simulation
  - **Thesis :** Researches on Geometric and Physical Structural Feature Analysis for 3D Shapes
- **School of Computer Science and Engineering, Beihang University** — Beijing
  Bachelor of Computer Science, GPA: 3.72/4 — *Sept. 2008 – July. 2012*
  - **Thesis :** Research and Implementation on Screen Space Based Real-time Fluid Surface Rendering of SPH

Experience

- **Smart Health Group, SenseTime Research** — Beijing
  Senior Research Scientist — *May 2018 - Present*
  - Leading a R&D team that focus on developing cutting-edge algorithms and products for intelligent diagnosis of cardiac and cerebral diseases based on CT/MR/US/DSA/ECG etc.
  - Delivered *SenseCare Coronary*, an AI-powered automatic diagnosis system for cardiovascular diseases, which has been deployed in top hospitals in China increasing diagnosis efficiency by more than 50%
- **Intelligent Media and Cognition Lab, Tsinghua University** — Beijing
  Postdoctoral Researcher — *July 2019 - Oct. 2021*
  - Working with Prof. Yue Gao and conducting researches on automatic 3D reconstruction of pulmonary and cardiovascular anatomical structures and lesions using deep learning technique.

Awards & Honors

- National Graduate Scholarship — Beihang University, Oct. 2016
- Excellent Foundation of BUAA for PhD students — Beihang University, May, 2017
- Best Paper Award of ICVRV 2017 — ICVRV Organizers, Oct. 2017
- Outstanding Academic Paper Award — Beihang University, Apr. 2018
- 1st Place Award of AtriaSeg Challenge, STACOM @ MICCAI 2018 — STACOM Organizers, Sept. 2018
- Xiaohejian Award (3/33) and Dean Innovation Award (3/33) — SenseTime Research, Jan. 2020
- Beijing Nova Program (149/1276) — Beijing Municipal Science & Technology Commision, July 2020

Research Projects

- **Intelligent Interpretation of Cardiac Imaging for Elderly Patients with CVDs** — 2021-2023
  Beijing Municipal Science & Technology Commision (Z211100002121165), Co-PI — *SenseTime Research*
  - Exploring AI-based methods to diagnose coronary diseases for elderly patients according to enhanced dynamic cardiac CT/MR, and studying the correlations between cardiac diseases and other senile diseases to find easier ways for CVDs early screening.
- **Intelligent Diagnosis of CVDs and PCI Surgery Assistance System** — 2020-2023
  Beijing Municipal Science & Technology Commision (Z201100006820064), PI — *SenseTime Research*
  - Developing an intelligent system to help radiologists diagnose and treat CVDs more precisely and effciently, with geometric modeling of cardiovascular system, automatic diagnosis of coronary stenosis, CFD based CT Fractional Flow Reserve(CT-FFR), vulnerable plaque quantitative analysis, etc.
- **Intelligent Interpretation of Imaging/Pathology for the Elderly** — 2020-2023
  National Key Research and Development Project of China (2020YFC2004804), PI — *SenseTime Research*
  - Exploring novel methodologies for diagnosis of cardiac diseases by means of dynamic medical images, such as 4DCT, echocardiography, intravascular ultrasound, etc. and studying the correlations between cardiac diseases and other senile diseases.
- **Data Modeling and Interactive Virtual Surgery of Digital Human Organs** — 2012-2016
  NSFC Monumental Project (61190120), Participant — *Beihang University*
  - Developed the first PCI virtual surgery prototype system of China, including cardiovascular reconstruction, physical simulation of cardiac/tissue deformation, and real-time rendering of surgery scenes, etc.

Selected Publications

* *indicates students or researchers under my supervision,* † *indicates equal contribution*

W. Wang*, **Q. Xia**, Z. Yan, Z. Hu, Y. Chen, W. Zheng, X. Wang, S. Nie, D. Metaxas, S. Zhang. AVDNet: Joint coronary artery and vein segmentation with topological consistency. *Medical Image Analysis, 2023.*

Z. Wu, L. Wang, W. Wang, **Q. Xia**, C. Chen, A. Hao, S. Li. Pixel is All You Need: Adversarial Trajectory-Ensemble Active Learning for Salient Object Detection. *AAAI, 2023.*

Z. Liu, Z. Li*, Z. Hu, **Q. Xia**, R. Xiong, S. Zhang, T. Jiang. Contrastive and Selective Hidden Embeddings for Medical Image Segmentation. *IEEE Transactions on Medical Imaging, 2022.*

X. Huang*, N. Li, **Q. Xia**, S. Li, A. Hao and H. Qin. Multi-scale and Multi-level Shape Descriptor Learning via a Hybrid Fusion Networ. *Graphical Models, 2021.*

Z. Li*, **Q. Xia**, Z. Hu, W. Wang, L. Xu and S. Zhang. A Deep Reinforced Tree-Traversal Agent for Coronary Artery Centerline Extraction. *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI), 2021.*

W. Wang*, **Q. Xia**, Z. Hu, Z. Yan, Z. Li, Y. Wu, N. Huang, Y. Gao, D. Metaxas, and S. Zhang. Few-shot learning by a cascaded framework with shape-constrained pseudo label assessment for whole heart segmentation. *IEEE Transactions on Medical Imaging, 2021.*

Z. Xiong, **Q. Xia**, Z. Hu, N. Huang, C. Bian, Y. Zheng, S. Vesal, N. Ravikumar, A. Maierf et al. A global benchmark of algorithms for segmenting the left atrium from late gadolinium-enhanced cardiac magnetic resonance imaging." *Medical Image Analysis, 2021.*

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, 2020.*

Q. Xia, S. Li, A. Hao, and Q. Zhao. Deep learning for digital geometry processing and analysis: A review. *Journal of Computer Research and Development, 2019.*

J. Cui*, S. Li, **Q. Xia**, A. Hao and H. Qin. Learning multi-view manifold for single image based modeling. *Computers & Graphics, 2019.*

Q. Xia†, C. Chen†, J. Liu, S. Li, A. Hao and H. Qin. Efficient 4D shape completion from sparse samples via cubic spline fitting in linear rotation-invariant space. *Computers & Graphics, 2019.*

J. Liu†, **Q. Xia**†, S. Li, A. Hao and H. Qin.. Quantitative and flexible 3D shape dataset augmentation via latent space embedding and deformation learning. *Computer Aided Geometric Design, 2019.*

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, 2019.*

X. Tan, X. Peng, L. Liu and **Q. Xia**. Automatic human body feature extraction and personal size measurement. *Journal of Visual Languages & Computing, 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, 2018.* **(1st Place Award in Atrial Segmentation Challenge, STACOM @ MICCAI 2018)**

Z. Xie*, S. Li, **Q. Xia** and A. Hao. Kinetic simulation of cardiac motion with patient-specific coronary artery vessels attached for PCI simulator. *IEEE International Conference on Virtual Reality and Visualization (ICVRV), 2017.* **(Best Paper Award)**.

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, 2016.*

S. Li, **Q. Xia**, A. Hao, H. Qin and Q. Zhao. Haptics-equiped interactive PCI simulation for patient-specific surgery training and rehearsing. *Science China Information Sciences, 2016.*

Q. Xia, S. Li, H. Qin and A. Hao. Modal Space Subdivision for Physically-plausible 4D Shape Sequence Completion from Sparse Samples. *Pacific Graphics, 2015.*