

Kai Xu

PERSONAL INFORMATION

Position: Associate Professor
Date of Birth: Oct. 26, 1982

Citizenship: P. R. China
Place of Birth: Hohhot, P. R. China

CONTACT INFORMATION

School of Computer Science
National University of Defense Technology
47 Yanwachi Street, Kaifu District
Changsha, Hunan 410073 P. R. CHINA

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RESEARCH INTERESTS

Computer graphics, geometry processing, geometric modeling and computer vision.

EDUCATION

National University of Defense Technology, Changsha, Hunan, China

Ph.D., School of Computer Science, June, 2011.

- Dissertation: "Semantics Driven 3D Shape Analysis and Modeling".
- Advisor: Yueshan Xiong.

Master, School of Computer Science, December, 2005.

Bachelor, School of Computer Science, July, 2004.

Simon Fraser University, Vancouver, BC, Canada

Visiting Student, School of Computer Science, November, 2009 - October, 2010

- Advisor: Hao (Richard) Zhang.

EMPLOYMENT

National University of Defense Technology, Changsha, Hunan, CHINA

Associate Professor, School of Computer Science

2011 - present

Shenzhen Institutes of Advanced Technology, Shenzhen, Guangdong, CHINA

Postdoctoral Researcher, working with Prof. Baoquan Chen

2012 - 2014

PROFESSIONAL MEMBERSHIP

ACM SIGGRAPH (2010-), China Computer Federation (CCF, 2011-)

HONORS AND GRANDS

- National Science Fund for Excellent Young Scholars, National Science Foundation of China (NSFC), 2016.
- Natural Science Award of Hunan Province (1st place, 3rd contributor), Hunan Province, China, 2014.
- Young Researcher Award of Geometric Design and Computing (GDC), GDC Technical Committee of CSIAM, 2016.
- LU Zengyong High-tech Award on CAD&CG (2nd place), China, 2013
- Excellent Ph.D Dissertation Award, PLA of China, 2013.

1. J. Li, **K. Xu***, S. Chaudhuri, M. E. Yumer, H. Zhang, L. Guibas, “GRASS: Generative Recursive Autoencoders for Shape Structures,” *ACM Trans. on Graphics (SIGGRAPH 2017)*, Vol. 36, No. 4, 2017. (*** corresponding author**)
2. C. Zhu, R. Yi, W. Lira, I. Alhashim, **K. Xu**, H. Zhang, “Shape Correspondence via Visual Shape Comparison,” *ACM Trans. on Graphics (SIGGRAPH 2017)*, Vol. 36, No. 4, 2017.
3. **K. Xu**, Y. Shi, L. Zheng, J. Zhang, M. Liu, H. Huang, H. Su, D. Cohen-Or and B. Chen, “3D Attention-Driven Depth Acquisition for Object Identification,” *ACM Trans. on Graphics (SIGGRAPH Asia 2016)*, Vol. 35, No. 6, 2016.
4. **K. Xu**, H. Huang, Y. Shi, H. Li, P. Long, J. Caichen, W. Sun and B. Chen, “Autoscanning for Coupled Scene Reconstruction and Proactive Object Analysis,” *ACM Trans. on Graphics (SIGGRAPH Asia 2015)*, Vol. 34, No. 6, 2015.
5. I. Alhashim, **K. Xu**, Y. Zhuang, J. Cao, P. Simari and H. Zhang, “Deformation-Driven Topology-Varying 3D Shape Correspondence,” *ACM Trans. on Graphics (SIGGRAPH Asia 2015)*, Vol. 34, No. 6, 2015.
6. **K. Xu**, R. Ma, H. Zhang, C. Zhu, A. Shamir, D. Cohen-Or and H. Huang, “Organizing Heterogeneous Scene Collections through Contextual Focal Points,” *ACM Trans. on Graphics (SIGGRAPH 2014)*, Vol. 33, No. 4, 2014.
7. I. Alhashim, H. Li, **K. Xu**, J. Cao, R. Ma and H. Zhang, “Topology-Varying 3D Shape Creation via Structural Blending,” *ACM Trans. on Graphics (SIGGRAPH 2014)*, Vol. 33, No. 4, 2014.
8. H. Zhang, **K. Xu***, W. Jiang, J. Lin, D. Cohen-Or, and B. Chen, “Layered Analysis of Irregular Facades via Symmetry Maximization,” *ACM Trans. on Graphics (SIGGRAPH 2013)*, Vol. 32, No. 4, 2013. (*** corresponding author**)
9. O. van Kaick, **K. Xu**, H. Zhang, Y. Wang, S. Sun, A. Shamir, and D. Cohen-Or, “Co-Hierarchical Analysis of Shape Structures,” *ACM Trans. on Graphics (SIGGRAPH 2013)*, Vol. 32, No. 4, 2013.
10. **K. Xu**, H. Zhang, W. Jiang, R. Dyer, Z. Cheng, L. Liu and B. Chen, “Multi-Scale Partial Intrinsic Symmetry Detection,” *ACM Trans. on Graphics (SIGGRAPH Asia 2012)*, Vol. 31, No. 6, 2012.
11. **K. Xu**, H. Zhang, D. Cohen-Or, and B. Chen, “Fit and Diverse: Set Evolution for Inspiring 3D Shape Galleries,” *ACM Trans. on Graphics (SIGGRAPH 2012)*, Vol. 31, No. 4, 2012.
12. **K. Xu**, H. Zheng, H. Zhang, D. Cohen-Or, L. Liu, and Y. Xiong, “Photo-Inspired Model-Driven 3D Object Modeling,” *ACM Trans. on Graphics (SIGGRAPH 2011)*, Vol. 30, No. 4, 2011.
13. **K. Xu**, H. Li, H. Zhang, D. Cohen-Or, Y. Xiong, and Z.-Q. Cheng, “Style-Content Separation by Anisotropic Part Scales,” *ACM Trans. on Graphics (SIGGRAPH Asia 2010)*, Vol. 29, No. 5, 2010.
14. **K. Xu**, H. Zhang, A. Tagliasacchi, L. Liu, G. Li, M. Meng, and Y. Xiong, “Partial Intrinsic Reflectional Symmetry of 3D Shapes,” *ACM Trans. on Graphics (SIGGRAPH Asia 2009)*, Vol. 28, No. 5, 2009.
15. **K. Xu**, D. Cohen-Or, T. Ju, L. Liu, H. Zhang, and S. Zhou, “Feature-Aligned Shape Texturing,” *ACM Trans. on Graphics (SIGGRAPH Asia 2009)*, Vol. 28, No. 5, 2009.
16. J. Wang and **K. Xu**, “Shape Detection from Raw LiDAR Data with Subspace Modeling,” *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, to appear, 2016.
17. **K. Xu**, V. G. Kim, Q. Huang, E. Kalogeraki, “Data-Driven Shape Analysis and Processing,”

Computer Graphics Forum (Eurographics 2016 STAR Report), 2016.

18. O. Remil, Q. Xie, X. Xie, **K. Xu**, J Wang, "Surface Reconstruction with Data-driven Exemplar Priors," *Computer-Aided Design*, to appear, 2017.
19. Q. Yuan, G. Li, **K. Xu** and H. Huang, "Space-Time Co-Segmentation of Point Cloud Sequences," *Computer Graphics Forum (Eurographics 2016)*, Vol. 35, No. 2, 2016.
20. X. Guo, J. Lin, **K. Xu**, S. Chaudhuri and X. Jin, "CustomCut: On-demand Extraction of Customized 3D Parts with 2D Sketches," *Computer Graphics Forum (SGP 2016)*, Vol. 35, No. 5, 2016.
21. H. Li, G. Wan, H. Li, A. Sharf, **K. Xu** and B. Chen , "Mobility Fitting using 4D RANSAC," *Computer Graphics Forum (SGP 2016)*, Vol. 35, No. 5, 2016.
22. Z. Xie, **K. Xu***, W. Shan, L. Liu, Y. Xiong and H. Huang, "Projective Feature Learning for 3D Shapes with Multi-View Depth Images," *Computer Graphics Forum (Pacific Graphics 2015)*, Vol. 34, No. 6, 2015.
23. Q. Zheng, Z. Hao, H. Huang, **K. Xu**, H. Zhang, D. Cohen-Or and B. Chen, "Skeleton-Intrinsic Symmetrization of Shapes," *Computer Graphics Forum (Eurographics 2015)*, Vol. 34, No. 2, 2015.
24. Z. Xie, **K. Xu***, L. Liu and Y. Xiong, "3D Shape Segmentation and Labeling via Extreme Learning Machine," *Computer Graphics Forum (SGP 2014)*, Vol. 33, No. 5, 2014.
25. J. Wang, **K. Xu**, L. Liu, J. Cao, S. Liu and X. Gu, "Consolidation of Low-quality Point Clouds from Outdoor Scenes," *Computer Graphics Forum (SGP 2013)*, Vol. 32, No. 5, 2013.
26. Y. Shi, P. Long, **K. Xu***, H. Huang and Y. Xiong, "Data-Driven Contextual Modeling for 3D Scene Understanding," *Computers and Graphics*, Vol. 55, 2016.
27. B. Wu, **K. Xu***, Y. Zhou, Y. Xiong and H. Huang, "Skeleton-Guided 3D Shape Distance Field Metamorphosis," *Graphical Models*, Vol. 85, 2016.
28. Y. Wang, Z. Xie, **K. Xu**, Y. Dou and Y. Lei, "An Efficient and Effective Convolutional Auto-Encoder Extreme Learning Machine Network for 3D Feature Learning," *Neurocomputing*, Vol. 174, 2016.
29. Z. Xie, Y. Xiong and **K. Xu***, "AB3D: Action-Based 3D Descriptor for Shape Analysis," *The Visual Computer (CGI 2014)*, Vol. 30, No. 6-8, 2014.
30. X. Guo, J. Lin, **K. Xu** and X. Jin, "Creature Grammar for Creative Modeling of 3D Monsters," *Graphical Models (GMP 2014)*, Vol. 76, No. 5, 2014.
31. J. Li, W. Xu, Z. Cheng, **K. Xu*** and R. Klein, "Lightweight Wrinkle Synthesis for 3D Facial Modeling and Animation," *Computer-Aided Design (SPM 2014)*, Vol. 58, 2014.
32. Y. Chen, G. Dang, Z. Cheng and **K. Xu***, "Fast capture of personalized avatar using two Kinects," *Journal of Manufacturing Systems*, Vol. 33, No. 1, 2014.
33. X. Xie, **K. Xu**, N. Mitra, D. Cohen-Or and B. Chen, "Sketch-to-Design: Context-based Part Assembly," *Computer Graphics Forum*, Vol. 32, No. 8, 2013.
34. W. Jiang, **K. Xu***, Z. Cheng, and H. Zhang, "Skeleton-Based Intrinsic Symmetry Detection on Point Clouds," *Graphical Models*, Vol. 75, No. 4, 2013.
35. W. Jiang, **K. Xu***, Z. Cheng, R. Martin, and G. Dang, "Curve Skeleton Extraction by Coupled Graph Contraction and Surface Clustering," *Graphical Models*, Vol. 75, No. 3, 2013.

36. Y. Wang, Y. Xiong, **K. Xu**, and D. Liu, “vKASS: A Surgical Procedure Simulation System for Arthroscopic Anterior Cruciate Ligament Reconstruction”, *Computer Animation and Virtual Worlds*, vol. 24, No. 1, 2013.
37. Y. Wang, **K. Xu**, J. Li, H. Zhang, A. Shamir, L. Liu, Z. Cheng and Y. Xiong, “Symmetry Hierarchy of Man-Made Objects”, *Computer Graphics Forum (Eurographics 2011)*, Vol. 30, No. 2, 2011.
38. **K. Xu**, H. Zhang, D. Cohen-Or and Y. Xiong, “Dynamic Harmonic Fields for Surface Processing,” *Computers and Graphics (SMI 2009)*, Vol. 33, No. 3, 2009.
39. **K. Xu**, Z. Cheng, Y. Z. Wang, Y. Xiong and H. Zhang, “Quality Encoding for Tetrahedral Mesh Optimization,” *Computers and Graphics (SMI 2009)*, Vol. 33, No. 3, 2009.
40. Y. Wang, **K. Xu**, Y. Xiong and Z. Cheng, “2D Shape Deformation Based on As-Rigid-As-Possible Squares Matching”, *Computer Animation and Virtual Worlds (CASA 2008)*, Vol. 19, No. 3-4, 2009.

REFEREED
CONFERENCE
PUBLICATIONS

1. K. Lu, Y. Zhang, **K. Xu**, Y. Gao and R. Wilson, “Approximate Maximum Common Sub-graph Isomorphism Based on Discrete-Time Quantum Walk,” in *Proc. of ICPR*, 2014.
2. W. Jiang, **K. Xu**, Z. Cheng, R. Martin and G. Dang, “Curve Skeleton Extraction by Coupled Graph Contraction and Surface Clustering,” in *Computational Visual Media Conference*, 2012
3. **K. Xu**, Y. Xiong, Y. Wang, K. Tan, G. Guo, “A Simple and Stable Feature-Preserving Smoothing Method for Contours-Based Reconstructed Meshes,” in *Proc. of ACM GRAPHITE*, 2006.
4. **K. Xu**, Y. Wang, Y. Xiong, Z.-Q. Cheng, “Interactive Shape Manipulation Based on Space Deformation with Harmonic-Guided Clustering,” in *Proc. of International Conference on Computer Animation and Social Agent (CASA)*, short paper, 2008.
5. Z.-Q. Cheng, **K. Xu**, B. Li, Y. Wang, S.-Y. Jin, G. Dang, “A Mesh Meaningful Segmentation Algorithm Using Skeleton and Minima-Rule,” in *Proc. of International Symposium on Visual Computing (ISVC)*, 2007.
6. Y. Wang, Y. Xiong, **K. Xu**, K. Tan, G. Guo, “A Mass-Spring Model for Surface Mesh Deformation Based on Shape Matching,” in *Proc. of ACM GRAPHITE*, 2006.
7. Z.-Q. Cheng, B. Li, **K. Xu**, Y. Wang, G. Dang, S.-Y. Jin, “Error-Resilient Arithmetic Coding Algorithm for Compressed Meshes,” in *Proc. of CyberWorld (CW)*, 2008.
8. Z.-Q. Cheng, Y. Wang, B. Li, **K. Xu**, G. Dang, S.-Y. Jin, “A Survey of Methods for Moving Least Squares Surfaces,” in *IEEE/Eurographics Symposium on Point Based Graphics (PBG)*, 2008.
9. Z.-Q. Cheng, W. Jiang, G. Dang, R. Martin, J. Li, H. Li, Y. Chen, Y. Wang, B. Li, **K. Xu**, S. Jin, “Non-rigid Registration in 3D Implicit Vector Space,” in *Proc. of IEEE Int. Conf. on Shape Modeling and Applications (SMI)*, 2010.

COURSES,
TUTORIALS, AND
INVITED TALKS

- SIGGRAPH Asia Course, “Data-Driven Shape Analysis and Processing”, Instructor, with Vladimir Kim, Qixing Huang, Evangelos Kalogerakis and Niloy Mitra, SIGGRAPH Asia 2016, Macao, China, Dec 5, 2016.
- Eurographics STAR Report, “Data-Driven Shape Analysis and Processing”, Organizer, with Vladimir Kim, Qixing Huang, and Evangelos Kalogerakis, Eurographics 2016, Lisbon, Portugal, May 13, 2016.

- SIGGRAPH Asia Course, “Data-Driven Visual Computing”, Organizer, with Leonidas Guibas, Alexei Efros, Shi-Min Hu, Ariel Shamir, Siddhartha Chaudhuri and Jun-Yan Zhu, SIGGRAPH Asia 2014, Shenzhen, China, Dec 4, 2014.
- Panel Speech, “High-level Shape Understanding”, CAD/Graphics 2015, Xi’an, China, June 13, 2013.
- Invited Talk, “2D-3D Fusion for Data-Driven Visual Computing”, International Forum on 2D-3D Fusion and HCI, CCF YOCSEL Hangzhou & Hangzhou Normal University, Hangzhou, China, July 5-6, 2014.

PROFESSIONAL
SERVICES

Journal Editorial Board

- Computer Graphics Forum (IF=1.542), Associate Editor (2016–present).
- Computers and Graphics (IF=1.120), Associate Editor (2014–present).
- The Visual Computer (IF=1.060), Associate Editor (2015–present).
- Frontiers of Computer Science (IF=0.660), Young Associate Editor (2014–present).

Program Co-chair

- CAD/Graphics 2017.
- ICVRV 2017.
- GDC 2016.

International Program Committee

- SIGGRAPH Asia 2017.
- Eurographics Short Papers 2013–2016.
- Eurographics Symposium on Geometry Processing (SGP) 2013–2015, 2017.
- Pacific Graphics 2013–2017.
- Geometric Modeling and Processing (GMP) 2014.
- Eurographics 3DOR workshop 2017.
- IEEE CAD/Graphics 2013, 2015.
- Chinagraph 2014, 2016.

Paper Review for International Conferences

- SIGGRAPH, SIGGRAPH Asia, Eurographics, Pacific Graphics, SGP, etc.

Paper Reviewer of International Journals

- ACM Transactions on Graphics (TOG), IEEE Transactions on Visualization and Computer Graphics (TVCG), ACM Transactions on Applied Perception (TAP), Computer Graphics Forum, Graphical Models, The Visual Computer, Computers and Graphics, Journal of Graphics Tools, Journal of Visualization, Neurocomputing.