Kai Xu

Personal Information

Position: Assistant 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
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Research Interests

Computer graphics, geometry processing and geometric modeling.

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.

- Master Thesis: "Research and Implementation of Virtual Arthroscopic Surgery System with Force Feedback".
- Advisor: Yueshan Xiong.

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

Assistant Professor, School of Computer Science **July, 2011 -**

Shenzhen Institutes of Advanced Technology, Shenzhen, Guangdong, CHINA

Postdoctoral Researcher, Visual Computing Center **September, 2011 -**

Professional Membership

ACM SIGGRAPH (2010-)

Honors and Grands

- Excellent Ph.D Dissertation Award, PLA of China, 2014.
- LU Zengyong High-tech Award on CAD&CG (2nd pleace), China, 2013
- Excellent Ph.D Dissertation Award, National University of Defense Technology (10/300+), 2011.
- Innovation Program for Excellent Graduate Students Grants, National University of Defense Technology ($< 5\%$), 2007.

Refereed Journal Publications

1. **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.

2. 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.

3. 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**)

4. 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.

5. **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.

6. **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.

7. **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.

8. **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.

9. **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.

10. **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.

11. 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. (**corresponding author**)

12. 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.

13. 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.

14. 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. (**corresponding author**)

15. 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)*, to appear, 2014.

16. 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.

17. 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.

18. W. Jiang, **K. Xu**, Z. Cheng, and H. Zhang, "Skeleton-Based Intrinsic Symmetry Detection on Point Clouds," *Graphical Models*, Vol. 75, No. 4, 2013. (**corresponding author**)

19. 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. (**corresponding author**)

20. 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.

21. 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.

22. **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.

23. **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.

24. 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

- Course, "Symmetry Analysis: Towards High-level Geometry Processing", Summer Seminar 2013 on Computer Graphics, State Key Lab of CAD&CG, Zhejiang University, Hangzhou, China, June 15, 2013.

- Invited talk, "Multi-scale Symmetry and Application, School of Computer", School of Computer,

Shandong University, Jinan, China, Sep. 30, 2013.

- Invited talk, "Symmetry Detection: Approach and Applications", School of Computer, South China University of Technology, Guangzhou, China, June 13, 2013.
- Invited talk, "Symmetry Detection: Approach and Applications", School of Information Science and Technology, Sun Yat-Sen University, Guangzhou, China, April 17, 2013.
- Invited talk, "Symmetry Detection: Approach and Applications", CCF YOCSEF Changsha Seminar 2013 on Visual Computing, Central South University, Changsha, China, March 28, 2013.
- Invited talk, "Multiscale Partial Intrinsic Symmetry Detection", Changchun Workshop on Computer Graphics 2012, Mathematics School, Jilin University, Changchun, China, September 21, 2012.
- Invited talk, "Multiscale Partial Intrinsic Symmetry Detection", Workshop on City Modeling and Visualization 2012, Visual Computing Research Center, SIAT, Shenzhen, China, September 11, 2012.
- Course, "Symmetries in 3D Shapes: Analysis and Applications", USTC Summer School 2012 on "Advances in Computer Graphics", University of Science and Technology of China, Hefei, Anhui, China, July 3, 2012.
- Course, "Data-Driven 3D Shape Modeling", USTC Summer School 2012 on "Advances in Computer Graphics", University of Science and Technology of China, Hefei, Anhui, China, July 4, 2012.

Professional Services

International Program Committee

- SIGGRAPH Asia Technical Briefs & Posters 2013, 2014.
- Eurographics Short Papers 2013.
- Eurographics Symposium on Geometry Processing (SGP) 2013, 2014.
- Pacific Graphics 2013, 2014.
- Geometric Modeling and Processing (GMP) 2014.
- IEEE CAD/Graphics 2013.
- Chinagraph 2014.

Paper Review for International Conferences

- SIGGRAPH 2011, 2012, 2013, 2014;
- SIGGRAPH Asia 2009, 2011, 2012, 2013, 2014.
- Eurographics 2010, 2011, 2012, 2013, 2014;
- Pacific Graphics 2009, 2012;

Paper Reviewer of International Journals

- ACM Transactions on Graphics (TOG) (ACM);
- IEEE Transactions on Visualization and Computer Graphics (TVCG) (IEEE);
- Computer Graphics Forum (Eurographics Association and Wiley-Blackwell);

- Graphical Models (Elsevier);
- The Visual Computer (Springer);
- Computers and Graphics (Elsevier);
- Neurocomputing (Elsevier).