Weihua Tong

Ph.D., Associate Professor

Personal information

Gender:	Male
Date of Birth:	October 3, 1978
Place of Birth:	Quzhou City, Zhejiang Province, P.R. China
Home Address:	Keda Garden, West Campus, 18-305, Tongcheng Southern Road 2, Hefei City, Anhui Province, P.R. China
Office Address:	University of Science and Technology of China, School of Mathematical Sciences, Jinzhai Road 96, Management & Research Bulding 12-05, East Campus, Hefei City, Anhui Province, P.R. China
Mobile Phone:	+86 13170016801
E-mail:	tongwh@ustc.edu.cn
Home Page	http://staff.ustc.edu.cn/~tongwh/

Education

Sep 1999 – Dec 2004 **University of Science and Technology of China**, *Doctor of Philosophy*, major: computational mathematics, thesis topics: surface reconstruction, implicit surface fitting, T-spline, fairing surface, variational method.
Supervisors: Prof. Yuyu Feng and Prof. Falai Chen

Sep 1995 – Jul 1999 **University of Science and Technology of China**, *Bachelor of Science*, major: information and computation science.

Work Experience

Jun 2010 – Prsent **Associate Professor**, *School of Mathematical Sciences*, University of Science and Technology of China.

Sep 2004 – Jun 2010 **Assistant Professor**, *School of Mathematical Sciences*, University of Science and Technology of China.

Oct 2013 – Oct 2014 **Visiting Scholar**, *Courant Institute of Mathematical Sciences*, New York University, The United States of America.
Mentor: Prof. Denis Zorin. Research interests: parameterization, quadrangulation.

Jan 2010 – Aug 2010 **Research Fellow**, *Nanyang Technological University*, Singapore.
Mentor: Prof. Xuecheng Tai. Research interests: PDE based mesh processing, feature detection, mesh parameterization.

Aug 2007 – Jul 2008 **Post Doctorate**, *Seoul National University*, South Korea.
Mentor: Prof. Tae-wan Kim. Research interests: geometric continuous spline surfaces of arbitrary topology, shape optimization, T-spline.

Publications

Xiaohan Bao, Weihua Tong, and Falai Chen. A spectral segmentation method for large meshes. *Communications in Mathematics and Statistics*, published online:1–25, 2022.

Chen Jiang and Weihua Tong. Curvature transport method for solving mesh singularities. *Journal of Computer-Aided Design & Computer Graphics(in Chinese)*, 33(10):1563–1572, 2021.

Weihua Tong and Ming Chen. A sufficient condition for 3d typical curves. *Computer Aided Geometric Design*, 87(101991):1–14, 2021.

Weihua Tong, Xiankang Yang, Maodong Pan, and Falai Chen. Spectral mesh segmentation via ℓ_0 gradient minimization. *IEEE Transactions on Visualization and Computer Graphics*, 26(4):1807–1820, 2020.

Maodong Pan, Falai chen, and Weihua Tong. Volumetric spline parameterization for isogeometric analysis. *Computer Methods in Applied Mechanics and Engineering*, 359(112769):1–19, 2020.

Xiankang Yang, Maodong Pan, and Weihua Tong. Feature lines extraction algorithm on meshes based on l0 optimization. *Computer Engineering(in Chinese)*, 45(7):251–257, 2019.

Wang Fei, Falai chen, and Weihua Tong. Construction of b-spline surfaces interpolating curvature and feature curves. *Journal of Computer-Aided Design & Computer Graphics(in Chinese)*, 30(12):2193–2202, 2018.

Maodong Pan, Falai chen, and Weihua Tong. Low-rank parameterization of planar domains for isogeometric analysis. *Computer Aided Geometric Design*, 63:1–16, 2018.

Maodong Pan, Weihua Tong, and Falai Chen. Phase-field guided surface reconstruction based on implicit hierarchical b-splines. *Computer Aided Geometric Design*, 52-53:154–169, 2017.

Maodong Pan, Weihua Tong, and Falai Chen. Compact implicit surface reconstruction via low-rank tensor approximation. *Computer-Aided Design*, 78(9):158–167, 2016.

Weihua Tong and Xuecheng Tai. A variational approach for detecting feature lines on meshes. *Journal of Computational Mathematics*, 34(1):87–112, 2016.

Weiming Wang, Tuanfeng Y. Wang, Zhouwang Yang, Ligang Liu, Xin Tong, Weihua Tong, Jiansong Deng, Falai Chen, and Xiuping Liu. Cost-effective printing of 3d objects with skin-frame structures. *ACM Transactions on Graphics (Proc. SIGGRAPH Aisa)*, 32(6):177, 2013.

Weihua Tong and Taewan Kim. Local and singularity-free G^1 triangular spline surfaces using a minimum degree scheme. *Computing*, 86(2-3):235–255, 2009.

Weihua Tong and Taewan Kim. High-order approximation of implicit surfaces by G^1 triangular spline surfaces. *Computer-Aided Design*, 41(6):441–455, 2009.

Jiansong Deng, Falai Chen, Xin Li, Changqi Hu, Weihua Tong, Zhouwang Yang, and Yuyu Feng. Polynomial splines over hierarchical T-meshes. *Graphical Models*, 74(4):74–86, 2008.

Xiuying Li, Weihua Tong, and Yuyu Feng. Conversion between rational s-patches and rational triangular b'eizer patches. *Journal of University of Science and Technology of China(in Chinese)*, 74(4):74–86, 2008.

Weihua Tong, Yuyu Feng, and Falai Chen. Hierarchical implicit tensor-product B-spline surface and it's application in surface reconstruction. *Journal of Software(in Chinese)*, 17(Supp.):11–20, 2006.

Weihua Tong, Falai Chen, and Yuyu Feng. A fast and adaptive surface reconstruction algorithm based on the implicit tensor-product B-spline(ITPBS) surfaces. In *Proceedings of The Seventh China-Japan Seminar on Numerical Mathematics*, pages 161–178, 2006.

Weihua Tong, Yuyu Feng, and Falai Chen. A surface reconstruction algorithm based on implicit T-spline surfaces. *Journal of Computer-Aided Design & Computer Graphics(in Chinese)*, 18(3):358–365, 2006.

Weihua Tong, Falai Chen, and Yuyu Feng. Fairing of implicit surface via partial differential equations. *Chinese Journal of Computers(in Chinese)*, 27(9):1264–1271, 2004.

Yuyu Feng, Weihua Tong, and Xiaoqun Chen. The solution of difference equations and its applications in CAGD. In *CAD/Graphics 2003 Technology and Its Applications*, Proceedings of 8-th International Conference on CAD/Graphics, pages 371–372, Macao, 2003.

Research Interests

Computer Graphics	Geometry processing, parameterization, quadrangulation, segmentation, feature extraction, 3D printing ...
Computer Aided Geometry Design	Geometric continuous spline surfaces, shape optimization, T-spline, surface reconstruction based on implicit surfaces, fairing, fitting...

Computer Skills

Basic Knowledge	Discrete mathematics, data structure and algorithm, operating system, database theory, computer graphics, numerical analysis, computational geometry ...
Basis skills	C, C++, Python programming; Windows and Unix programming platform; Network programming ...
Special skills	3D Graphics & Image: OpenGL, Qt, CUDA, Pov-Ray; Numerical & Symbol Computation: Matlab, Maple, Mathematica ...

PhD thesis

Title	Reverse Engineering based on Implicit Surfaces
Supervisors	Prof. Yu-Yu Feng and Prof. Fa-Lai Chen

Description Reverse engineering, as a rapid developing technology, has been widely used in computer aided design and manufacture, biology and medical engineering, the film industry with animation and special effects, virtual manufacturing and education, non-destructive detect, etc. Based on the implicit surface technique, how to solve some essential and important problems in reverse engineering, is the center issue of this thesis ...

Travel History

The United States of America(2013-2014); Singapore(2010); South Korea(2007-2008)