

# Yong-Liang Yang

## Lecturer

Department of Computer Science  
University of Bath

4.62 1W, University of Bath  
Bath, United Kingdom  
BA2 7AY

Phone: +44 (0)1225 386673  
Email: [y.yang@cs.bath.ac.uk](mailto:y.yang@cs.bath.ac.uk)  
Homepage: <http://www.yongliangyang.net>

## Research Interests

Computer Graphics, Geometric Modelling, Computational Design, Interactive Techniques, Virtual and Augmented Reality, Applied Machine Learning

## Employment

- 2014-pres. Lecturer, Department of Computer Science, University of Bath, UK
- 2011-2014 Research Scientist, Visual Computing Center, KAUST, KSA
- 2009-2011 Post-doctoral Scholar, Visual Computing Center, KAUST, KSA  
with Helmut Pottmann and Niloy J. Mitra

## Education

- 2009 Ph.D. in Computer Science, Tsinghua University, China  
Advisor: Shi-Min Hu
- 2006 M.E. in Computer Science and Technology, Tsinghua University, China  
Advisor: Shi-Min Hu
- 2000-2004 B.E. in Computer Science and Technology, Tsinghua University, China

## Academic Visit

- 10.2008-04.2009 Center for Visual Computing, Stony Brook University  
with Xianfeng David Gu
- 07.2005-09.2005 Industrial Geometry Group, Vienna University of Technology  
with Helmut Pottmann

## Publications

- 2018 | You-En Lin, Yong-Liang Yang, and Hung-Kuo Chu. Scale-aware black-and-white abstraction of 3D shapes. *ACM Transactions on Graphics*, 37(4):117:1–117:11, 2018 (ACM SIGGRAPH Proceedings)

- Thu Nguyen-Phuoc, Chuan Li, Stephen Balaban, and Yong-Liang Yang. Rendernet: A deep convolutional network for differentiable rendering from 3d shapes. In *Proceedings of the 32nd Conference on Neural Information Processing Systems, NIPS '18*, 2018
- Qun-Ce Xu, Bailin Deng, and Yong-Liang Yang. Ellipsoid packing structures on freeform surfaces. *Computer Graphics Forum*, 37(7), 2018
- Xiaokun Wu, Daniel Finnegan, Eamonn O'Neill, and Yong-Liang Yang. Handmap: Robust hand pose estimation via intermediate dense guidance map supervision. In *Proceedings of the 15th European Conference on Computer Vision, ECCV '18*, 2018
- Anamaria Ciucanu, Naval Bhandari, Xiaokun Wu, Shridhar Ravikumar, Yong-Liang Yang, and Darren Cosker. E-stopmotion: Digitizing stop motion for enhanced animation and games. In *Proceedings of the 11th annual conference on Motion, Interaction and Games, Motion in Games '18*, 2018
- Jufeng Yang, Yan Sun, Jie Liang, Yong-Liang Yang, and Ming-Ming Cheng. Understanding image impressiveness inspired by instantaneous human perceptual cues. In *Proceedings of the 32nd AAAI Conference on Artificial Intelligence, AAAI '18*, 2018b
- Jufeng Yang, Jie Liang, Kai Wang, Yong-Liang Yang, and Ming-Ming Cheng. Automatic model selection in subspace clustering via triplet relationships. In *Proceedings of the 32nd AAAI Conference on Artificial Intelligence, AAAI '18*, 2018a
- Haiming Zhao, Jufeng Wang, Xiaoyu Ren, Jingyuan Li, Yong-Liang Yang, and Xiaogang Jin. Personalized food printing for portrait images. *Computers & Graphics*, 70:188 – 197, 2018
- 2017 Ya-Ting Yue, Yong-Liang Yang, Gang Ren, and Wenping Wang. Scenectrl: Mixed reality enhancement via efficient scene editing. In *Proceedings of the 30th Annual ACM Symposium on User Interface Software and Technology, UIST '17*, pages 427–436, 2017a
- Ya-Ting Yue, Xiaolong Zhang, Yong-Liang Yang, Gang Ren, Yi-King Choi, and Wenping Wang. WireDraw: 3D wire sculpturing guided with mixed reality. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems, CHI '17*, pages 3693–3704, 2017b
- 2016 Chi-Han Peng, Yong-Liang Yang, Fan Bao, Daniel Fink, Dong-Ming Yan, Peter Wonka, and Niloy J. Mitra. Computational network design from functional specifications. *ACM Transactions on Graphics*, 35(4):131:1–131:12, 2016 (ACM SIGGRAPH Proceedings)
- Ming-Hsun Kuo, Yong-Liang Yang, and Hung-Kuo Chu. Feature-aware pixel art animation. *Computer Graphics Forum*, 35(7):411–420, 2016 (Pacific Graphics)
- Daniel Beale, Yong-Liang Yang, Neill Campbell, Darren Cosker, and Peter Hall. Fitting quadrics with a bayesian prior. *Computational Visual Media*, 2(2):107–117, 2016
- 2015 Ming-Hsun Kuo, You-En Lin, Hung-Kuo Chu, Ruen-Rone Lee, and Yong-Liang Yang. Pixel2brick: Constructing brick sculptures from pixel art. *Computer Graphics Forum*, 34(7):339–348, 2015 (Pacific Graphics)

- Yong-Liang Yang, Jun Wang, and Niloy J. Mitra. Reforming shapes for material-specific fabrication. *Computer Graphics Forum*, 34(5):53–64, 2015 (Symposium on Geometry Processing)
- 2014 Chi-Han Peng, Yong-Liang Yang, and Peter Wonka. Computing layouts with deformable templates. *ACM Transactions on Graphics*, 33(4):99:1–99:11, 2014 (ACM SIGGRAPH Proceedings)
- Sawsan AlHalawani, Yong-Liang Yang, Peter Wonka, and Niloy J. Mitra. What makes london work like london? *Computer Graphics Forum*, 33(5):157–165, 2014 (Symposium on Geometry Processing)
- 2013 Yong-Liang Yang, Jun Wang, Etienne Vouga, and Peter Wonka. Urban pattern: Layout design by hierarchical domain splitting. *ACM Transactions on Graphics*, 32(6):181:1–181:12, 2013 (ACM SIGGRAPH ASIA Proceedings)
- Yong-Liang Yang and Qi-Xing Huang. Traygen: Arranging objects for packaging and exhibition. *Computer Graphics Forum*, 32(7):187–195, 2013 (Pacific Graphics Proceedings)
- Niloy J. Mitra, Yong-Liang Yang, Dong-Ming Yan, Wilmot Li, and Maneesh Agrawala. Illustrating how mechanical assemblies work. *Communications of the ACM*, 56(1):106–114, 2013
- Sawsan AlHalawani, Yong-Liang Yang, Han Liu, and Niloy J. Mitra. Interactive facades: Analysis and synthesis of semi-regular facades. *Computer Graphics Forum*, 32(2pt2):215–224, 2013 (Eurographics Proceedings)
- Han Liu, Yong-Liang Yang, Sawsan Alhalawani, and Niloy J. Mitra. Constraint-aware interior layout exploration for pre-cast concrete-based buildings. *The Visual Computer*, 29(6-8):663–673, 2013 (Computer Graphics International Proceedings)
- 2012 Yong-Liang Yang and Chao-Hui Shen. Multi-scale salient features for analyzing 3d shapes. *Journal of Computer Science and Technology*, 27(6):1092–1099, 2012
- Xin Zhao, Cheng-Cheng Tang, Yong-Liang Yang, Helmut Pottmann, and Niloy J. Mitra. Intuitive design exploration of constrained meshes. In *Proceedings of Advances in Architectural Geometry 2012*, pages 305–318, 2012
- 2011 Yong-Liang Yang, Yi-Jun Yang, Helmut Pottmann, and Niloy J. Mitra. Shape space exploration of constrained meshes. *ACM Transactions on Graphics*, 30(6):124:1–124:12, 2011 (ACM SIGGRAPH ASIA Proceedings)
- 2010 Niloy J. Mitra, Yong-Liang Yang, Dong-Ming Yan, Wilmot Li, and Maneesh Agrawala. Illustrating how mechanical assemblies work. *ACM Transactions on Graphics*, 29:58:1–58:12, 2010 (ACM SIGGRAPH Proceedings)
- 2009 Yong-Liang Yang, Ren Guo, Feng Luo, Shi-Min Hu, and Xianfeng Gu. Generalized discrete ricci flow. *Computer Graphics Forum*, 28(7):2005–2014, 2009 (Pacific Graphics Proceedings)
- Helmut Pottmann, Johannes Wallner, Qi-Xing Huang, and Yong-Liang Yang. Integral invariants for robust geometry processing. *Computer Aided Geometric Design*, 26(1):37–60, 2009

- 2008 Yong-Liang Yang, Junho Kim, Feng Luo, Shi-Min Hu, and Xianfeng Gu. Optimal surface parameterization using inverse curvature map. *IEEE Transactions on Visualization and Computer Graphics*, 14(5):1054–1066, 2008
- Han-Bing Yan, Shimin Hu, Ralph R. Martin, and Yong-Liang Yang. Shape deformation using a skeleton to drive simplex transformations. *IEEE Transactions on Visualization and Computer Graphics*, 14(3):693–706, 2008
- 2007 Helmut Pottmann, Johannes Wallner, Yong-Liang Yang, Yu-Kun Lai, and Shi-Min Hu. Principal curvatures from the integral invariant viewpoint. *Computer Aided Geometric Design*, 24(8-9):428–442, 2007
- 2006 Yong-Liang Yang, Yu-Kun Lai, Shi-Min Hu, and Helmut Pottmann. Robust principal curvatures on multiple scales. In *Proceedings of the Symposium on Geometry processing*, pages 223–226, 2006
- Helmut Pottmann, Qi-Xing Huang, Yong-Liang Yang, and Shi-Min Hu. Geometry and convergence analysis of algorithms for registration of 3d shapes. *International Journal of Computer Vision*, 67(3):277–296, 2006
- Yang Liu, Helmut Pottmann, Johannes Wallner, Yong-Liang Yang, and Wenping Wang. Geometric modeling with conical meshes and developable surfaces. *ACM Transactions on Graphics*, 25(3):681–689, 2006 (ACM SIGGRAPH Proceedings)

## Industry-linked Projects

Saudi Aramco, Novel seismic attributes via integral invariants, 2010-2011.

OMRON China, Fast bin-picking system based on global/local registration, 2005-2007 (3 sub-projects).

## Funding

Sept. 2014: University of Bath startup funding (PI) 12,000£

Sept. 2015: EPSRC - Centre for the Analysis of Motion, Entertainment Research and Applications (Co-I) 3,994,055£

Sept. 2015: EPSRC - Acquiring Complete and Editable Outdoor Models from Video and Images (Co-I) 1,003,256£

July 2016: University of Bath alumni funding (PI) 18,000£

June 2017: University of Bath international funding (PI) 5,000£

## Conference Talks

Symposium on Geometry Processing, *Reforming Shapes for Material-specific Fabrication*, July 6, 2015.

ACM SIGGRAPH ASIA, *Urban Pattern: Layout Design by Hierarchical Domain Splitting*, November 21, 2013.

Pacific Graphics, *TrayGen: Arranging Objects for Exhibition and Packaging*, October 8, 2013.

ACM SIGGRAPH ASIA, *Shape Space Exploration of Constrained Meshes*, December 13, 2011.

ACM SIGGRAPH, *Illustrating How Mechanical Assemblies Work*, July 27, 2010.

## Invited Talks

Geometric Design and Computing (GDC) 2017, *Computational Urban Layout Design*, invited by Jieqing Feng, August 14, 2017.

Research Seminar, National Tsing Hua University, *Computational Urban Layout Design*, invited by Hung-Kuo Chu, August 8, 2017.

Research Seminar, Cardiff University, *Analysis and Exploration of Geometric Structures*, invited by Paul Rosin, June 8, 2016.

Research Seminar, Chinese Academy of Sciences, *Analysis and Exploration of Geometric Structures*, invited by Dong-Ming Yan, September 1, 2015.

Research Seminar, Tsinghua University, *Analysis and Exploration of Geometric Structures*, invited by Shi-Min Hu, August 31, 2015.

International Computer Graphics Workshop, *Urban Pattern: Layout Design by Hierarchical Domain Splitting*, invited by Hui Huang, November 18, 2013.

Mini-Symposium of Geometric Patterns and Constructions, SIAM annual conference, *Shape Space Exploration of Constrained Meshes*, invited by Jorg Peters, July 12, 2012.

Workshop on Geometry, *Shape Space Exploration of Constrained Meshes*, invited by Johannes Wallner, June 20, 2011.

Workshop on Construction-Aware Design, *Design and Manipulation of Planar Quad Meshes*, invited by Helmut Pottmann, April 26, 2011.

## Academic Service

### Program Committee Member:

Pacific Graphics, 2014, 2015, 2016, 2017, 2018

Symposium on Geometry Processing, 2012, 2014, 2015, 2016, 2017, 2018

CAD/Graphics, 2015, 2017

Computational Visual Media, 2015, 2016, 2017, 2018

Advances in Architectural Geometry 2018

Shape Modeling International, 2011

### Reviewer:

ACM SIGGRAPH ASIA 2012, 2014, 2015, 2016, 2018

ACM SIGGRAPH 2011, 2012, 2016, 2017

SGP 2012, 2014-2018

IEEE Visualization 2011

Eurographics 2011, 2014-2018

Pacific Graphics 2011-2018

ACM Transactions on Graphics

IEEE Transactions on Visualization and Computer Graphics

IEEE Transactions on Automation Science and Engineering

IEEE Computer Graphics and Applications

Computer Graphics Forum

Computer-Aided Design

Computers & Graphics

Machine Vision and Applications

## Honors and Awards

ACM Research Highlight (for SIGGRAPH paper “Illustrating How Mechanical Assemblies Work”), 2012.  
Most Cited Paper Award of CAGD (for “Integral Invariants for Robust Geometry Processing”), 2012.  
Most Cited Paper Award of CAGD (for “Integral Invariants for Robust Geometry Processing”), 2011.  
Scholarship for Academic Visit from China Scholarship Council, 2008.  
First Prize of Student Research Training (SRT) in Tsinghua University, 2004.  
Excellent Graduate of Tsinghua University, 2004.  
Excellent Bachelor Thesis, Tsinghua University, 2004.  
Second-Class Scholarship of Excellent Students in Tsinghua University, 2003.  
Second-Class Scholarship of Excellent Students in Tsinghua University, 2002.  
Second-Class Scholarship of Excellent Students in Tsinghua University, 2001.  
First-Class Scholarship of Excellent Students in Tsinghua University, 2000.

## Teaching

CM50244 Computer Animation and Games I, Lecturer, University of Bath, Fall 2015, Fall 2016.  
CM50245 Computer Animation and Games II, Lecturer, University of Bath, Spring 2015, Spring 2016.  
CM50175A Research Project Preparation, Lecturer, University of Bath, Fall 2014.  
CM20219 Fundamentals of Computer Graphics, Lecturer, University of Bath, Fall 2014.  
Summer School for Carnegie Mellon University in Qatar, Instructor, KAUST, May-June, 2011.  
AMCS-272 Geometric Modeling, Teaching Assistant, KAUST, Spring 2010, Spring 2011.  
AMCS-248 Computer Graphics, Teaching Assistant, KAUST, Fall 2009, Fall 2010.  
G70240243 Computer Graphics, Teaching Assistant, Tsinghua University, Fall 2004, Fall 2007.  
U40240103 Fundamentals of Computer Graphics, Teaching Assistant, Tsinghua University, Spring 2005.

## Advising

### Current

Xiaokun Wu, Post-Doc Researcher, University of Bath, March 2017-.  
Thu Nguyen-Phuoc, Horia Bogdan, Quince Xu, PhD student, University of Bath, October 2016-.  
Victor Ceballos Inza, Alexandros Rotsidis, EngD student, University of Bath, 2017-.

### Past

Deshan Gong, Dingwen Wei, MSc student, University of Bath, Spring 2018.  
Zheng Wang, MSc student, University of Bath, Spring 2017.  
Yu Zhai, Yi-Fan Wang, Terry Thomas, MSc student, University of Bath, Spring 2016.  
Zhengxiang Huang, Zigui Zhang, MSc student, University of Bath, Spring 2015.  
Xin Zhao, MSc student of Helmut Pottmann, KAUST, 2012-2013. (Now at Google)

Sawsan AlHalawani, PhD student of Niloy Mitra, KAUST, 2012-2014. (Now at Prince Mohammad Bin Fahd University)

Han Liu, PhD student of Niloy Mitra, KAUST, 2012-2014. (Now at Simon Fraser University)