

Yong-Liang Yang

Senior Lecturer

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Research Interests

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

Employment

- 2019-pres. Senior Lecturer, Department of Computer Science, University of Bath, UK
- 2014-2019. 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

- 2021 Miao Wang, Zi-Ming Ye, Jin-Chuan Shi, and Yong-Liang Yang. Scene-context-aware indoor object selection and movement in vr. In *Proceedings of the 28th IEEE Conference on Virtual Reality and 3D User Interfaces*, IEEE VR '20, 2020
- Song-Hai Zhang, Shao-Kui Zhang, Wei-Yu Xie, Cheng-Yang Luo, Yong-Liang Yang, and Hongbo Fu. Fast 3d indoor scene synthesis by learning spatial relation priors of objects. *IEEE Transactions on Visualization and Computer Graphics*, 2021
- Lin-Zhuo Chen, Zheng Lin, Ziqin Wang, Yong-Liang Yang, and Ming-Ming Cheng. Spatial information guided convolution for real-time rgbd semantic segmentation. *IEEE Transactions on Image Processing*, 30:2313–2324, 2021
- 2020 Thu Nguyen-Phuoc, Christian Richardt, Long Mai, Yong-Liang Yang, and Niloy J. Mitra. Blockgan: Learning 3d object-aware scene representations from unlabelled images. In *Proceedings of the 34th Conference on Neural Information Processing Systems*, NIPS '20, 2020
- Qing Ran, Kaimao Zhou, Yong-Liang Yang, Junpeng Kang, Linan Zhu, Yizhi Tang, and Jieqing Feng. High-precision human body acquisition via multi-view binocular stereopsis. *Computers & Graphics*, 87:43 – 61, 2020
- Qinjie Xiao, Xiangjun Tang, You Wu, Leyang Jin, Yong-Liang Yang, and Xiaogang Jin. Deep shapely portraits. In *Proceedings of the 28th ACM International Conference on Multimedia*, 2020
- Meng-Yao Cui, Shao-Ping Lu, Miao Wang, Yong-Liang Yang, Yu-Kun Lai, and Paul Rosin. 3D computational modeling and perceptual analysis of kinetic depth effects. *Computational Visual Media*, 6:265–277, 2020
- Yassir Saquil, Qun-Ce Xu, Yong-Liang Yang, and Peter Hall. Rank3DGAN: Semantic mesh generation using relative attributes. In *Proceedings of the 34th AAAI Conference on Artificial Intelligence*, AAAI '20, 2020
- 2019 Bing Xu, Junfei Zhang, Rui Wang, Kun Xu, Yong-Liang Yang, Chuan Li, and Rui Tang. Adversarial Monte Carlo denoising with conditioned auxiliary feature modulation. *ACM Transactions on Graphics*, 38(6):224:1–224:12, 2019 (ACM SIGGRAPH Asia Proceedings)
- Qun-Ce Xu, Dong-Ming Yan, Wenbin Li, and Yong-Liang Yang. Anisotropic surface remeshing without obtuse angles. *Computer Graphics Forum*, 38(7), 2019
- Thu Nguyen-Phuoc, Chuan Li, Lucas Theis, Christian Richardt, and Yong-Liang Yang. HoloGAN: Unsupervised learning of 3D representations from natural images. In *IEEE International Conference on Computer Vision*, ICCV '19, 2019
- Song-Hai Zhang, Xin Dong, Hui Li, Ruilong Li, and Yong-Liang Yang. PortraitNet: Real-time portrait segmentation network for mobile device. *Computers & Graphics*, 80:104 – 113, 2019
- Congyue Deng, Jiahui Huang, and Yong-Liang Yang. Interactive modeling of lofted shapes from a single image. *Computational Visual Media*, 2019

- 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):87–95, 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£

Aug. 2019: Adobe gift funding (PI) 5,000\$

Sep. 2019: UK/China Network for the Creative Sector: Founders Meeting (Co-I) 12,000£

May 2020: Adobe gift funding (PI) 5,000\$

Oct. 2020: EPSRC - CAMERA 2.0 (Co-I) 3,401,654£

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

Research Seminar, Beihang University, *Joint 2D/3D Optimization and Learning for Design and Generation*, invited by Miao Wang, December 15, 2020.

Research Seminar, Nankai University, *Introduction to 3D Modelling and Its Development in the Artificial Intelligence Era*, invited by Qinglin Sun, October 28, 2019.

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, 2020

Symposium on Geometry Processing, 2012, 2014, 2015, 2016, 2017, 2018, 2019, 2020

Solid Physical Modeling, 2019, 2020, 2021

CAD/Graphics, 2015, 2017, 2021

Computational Visual Media, 2015, 2016, 2017, 2018, 2019, 2020, 2021

Advances in Architectural Geometry 2018

Shape Modeling International, 2011

Reviewer:

ACM SIGGRAPH ASIA 2012, 2014, 2015, 2016, 2018, 2019, 2020
ACM SIGGRAPH 2011, 2012, 2016, 2017
CVPR 2021
SGP 2012, 2014-2020
SPM 2019-2020
IEEE VR 2021
IEEE Visualization 2011, 2020
Eurographics 2011, 2014-2018
Pacific Graphics 2011-2020
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

CM500234 Principles of Programming for AI, University of Bath, Fall 2020, Spring 2021.
CM30075 Advanced Computer Graphics, Lecturer, University of Bath, Fall 2019-2020.
CM50244 Computer Animation and Games I, Lecturer, University of Bath, Fall 2015-2018.
CM50245 Computer Animation and Games II, Lecturer, University of Bath, Spring 2015-2019.
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

Fei Huang, PhD student, University of Bath, October 2020-.

Xi Tian, PhD student, University of Bath, March 2020-.

Yassir Saquil, PhD student, University of Bath, September 2019-.

Thu Nguyen-Phuoc, Horia Bogdan, Qunce Xu, PhD student, University of Bath, October 2016-.

Alumni

Victor Ceballos Inza, EngD student, University of Bath, 2017-2020. (Now at KAUST)

Xiaokun Wu, Post-Doc Researcher, University of Bath, March 2017-2018.

Yating Yue, Xiaolong Zhang, Visiting PhD Student, University of Hong Kong, August-November 2016.

John-Luke Edwards, Chaofan Li, Rowan Strafford, Chayaporn Chatchawalkit, Hongze Li, MSc student, University of Bath, Spring 2019.

Sergio Rayon Mora, Qi Chen, Caroline Imelda, Lei Yang, Michael Cooper, MSc student, University of Bath, Spring 2019.

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 EA Games)