

Contact Information	Pillar of Information Systems Technology and Design Singapore University of Technology and Design 8 Somapah Rd, Singapore 487372	(+65) 64994892 peng_song@sutd.edu.sg https://sutd-cgl.github.io
Research Interests	Computer Graphics. In particular, geometry modeling and processing, computational design, and digital fabrication.	
Academic Positions	Assistant Professor Information Systems Technology and Design Pillar Singapore University of Technology and Design	2019 - present
	Research Scientist School of Computer and Communication Sciences École Polytechnique Fédérale de Lausanne, Switzerland Mentor: <i>Mark Pauly</i>	2017 - 2019
	Associate Researcher School of Computer Science and Technology University of Science and Technology of China	2014 - 2017
	Research Fellow School of Computer Science and Engineering Nanyang Technological University, Singapore Mentor: <i>Chi-Wing Fu</i>	2013 - 2014
Education	Nanyang Technological University , Singapore PhD in Computer Science Thesis: <i>Interaction Techniques for 3D Visual Exploration on Large Displays</i> Advisor: <i>Chi-Wing Fu</i>	2010 - 2013
	Harbin Institute of Technology (Shenzhen) , China Master's Degree in Control Science and Engineering Thesis title: <i>Volumetric Stereo and Silhouette Fusion for 3D Object Modeling</i>	2007 - 2009
	Harbin Institute of Technology , China Bachelor's Degree in Automation	2003 - 2007
Journal Publications (ACM TOG)	<ol style="list-style-type: none">Ziqi Wang, Peng Song, Florin Isvoranu, and Mark Pauly. "Design and Structural Optimization of Topological Interlocking Assemblies," <i>ACM Transactions on Graphics (SIGGRAPH Asia)</i>, 38(6), Article No. 193, 2019.Ziqi Wang, Peng Song, and Mark Pauly. "DESIA: A General Framework for Designing Interlocking Assemblies," <i>ACM Transactions on Graphics (SIGGRAPH Asia)</i>, 37(6), Article No. 191, 2018.Peng Song, Xiaofei Wang, Xiao Tang, Chi-Wing Fu, Hongfei Xu, Ligang Liu, and Niloy J. Mitra. "Computational Design of Wind-up Toys," <i>ACM Transactions on Graphics (SIGGRAPH Asia)</i>, 36(6), Article No. 238, 2017. Featured ACM SIGGRAPH Press Release.Peng Song*, Chi-Wing Fu*, Yueming Jin, Hongfei Xu, Ligang Liu, Pheng-Ann Heng, and Daniel Cohen-Or. "Reconfigurable Interlocking Furniture," <i>ACM Transactions on Graphics (SIGGRAPH Asia)</i>, 36(6), Article No. 174, 2017. (*joint 1st authors)Peng Song, Bailin Deng, Ziqi Wang, Zhichao Dong, Wei Li, Chi-Wing Fu, and Ligang Liu. "CofiFab: Coarse-to-Fine Fabrication of Large 3D Objects," <i>ACM Transactions on Graphics (SIGGRAPH)</i>, 35(4), Article No. 45, 2016.	

6. Chi-Wing Fu*, **Peng Song***, Xiaoqi Yan, Lee Wei Yang, Pradeep Kumar Jayaraman, and Daniel Cohen-Or. "Computational Interlocking Furniture Assembly," *ACM Transactions on Graphics (SIGGRAPH)*, Article No. 91, 2015. (*joint 1st authors)
7. **Peng Song***, Chi-Wing Fu*, Prashant Goswami, Jianmin Zheng, Niloy J. Mitra, and Daniel Cohen-Or. "Reciprocal Frame Structures Made Easy," *ACM Transactions on Graphics (SIGGRAPH)*, 32(4), Article No. 94, 2013. (*joint 1st authors)
8. **Peng Song**, Chi-Wing Fu, and Daniel Cohen-Or. "Recursive Interlocking Puzzles," *ACM Transactions on Graphics (SIGGRAPH Asia)*, 31(6), Article No. 128, 2012.

Journal Publications (additional)

9. Hao Xu, Tianwen Fu, **Peng Song**, Mingjun Zhou, Chi-Wing Fu, and Niloy J. Mitra. "Computational Design and Optimization of Non-Circular Gears," *Computer Graphics Forum (Eurographics)*, 39(2), 399 - 409, 2020.
10. Keke Tang, **Peng Song**, Xiaofei Wang, Bailin Deng, Chi-Wing Fu, and Ligang Liu. "Computational Design of Steady 3D Dissection Puzzles," *Computer Graphics Forum (Eurographics)*, 38(2), 291-303, 2019.
11. **Peng Song**, Zhongqi Fu, and Ligang Liu. "Grasp Planning via Hand-Object Geometric Fitting," *The Visual Computer*, 34(2), 257-270, 2018.
12. Keke Tang, **Peng Song**, and Xiaoping Chen. "3D Object Recognition in Cluttered Scenes With Robust Shape Description and Correspondence Selection," *IEEE Access*, 5, 1833-1845, 2017.
13. **Peng Song**, Zhongqi Fu, Ligang Liu, and Chi-Wing Fu. "Printing 3D Objects with Interlocking Parts," *Computer Aided Geometric Design (GMP)*, 35-36, 137-148, 2015.
14. **Peng Song**. "Local Voxelizer: A Shape Descriptor for Surface Registration," *Computational Visual Media*, 1(4), 279-289, 2015.
15. **Peng Song**, Chi-Wing Fu, Prashant Goswami, Jianmin Zheng, Niloy J. Mitra, and Daniel Cohen-Or. "An Interactive Computational Tool for Large Reciprocal Frame Structures," *Nexus Network Journal*, 16(1), 109-118, 2014.
16. Chih-Kuo Yeh, **Peng Song**, Peng-Yen Lin, Chi-Wing Fu, Chao-Hung Lin, and Tong-Yee Lee. "Double-sided 2.5D Graphics," *IEEE Transactions on Visualization and Computer Graphics*, 19(2), 225-235, 2013.
17. **Peng Song**, Xiaojun Wu, and Michael Yu Wang. "Volumetric Stereo and Silhouette Fusion for Image-based Modeling," *The Visual Computer*, 26(12), 1435-1450, 2010.

Conference Publications

18. **Peng Song***, Xiaoqi Yan*, Wooi Boon Goh, Alex Qiang Chen, and Chi-Wing Fu. "Hand-Posture-Augmented Multitouch Interactions for Exploratory Visualization," *SIGGRAPH Asia*, Technical Brief, Article No. 27, 2016. (*joint 1st authors)
19. Keke Tang, **Peng Song**, and Xiaoping Chen. "Signature of Geometric Centroids for 3D Local Shape Description and Partial Shape Matching," *ACCV*, 311-326, 2016.
20. **Peng Song**, and Xiaoping Chen. "Pairwise Surface Registration Using Local Voxelizer," *Pacific Graphics*, short paper, 1-6, 2015.
21. Nicolas Mellado, **Peng Song**, Xiaoqi Yan, Chi-Wing Fu, and Niloy J. Mitra. "Computational Design and Construction of Notch-free Reciprocal Frame Structures," *Advances in Architectural Geometry (AAG)*, 181-197, 2014.
22. Xiaoqi Yan, **Peng Song**, Chi-Wing Fu, Wooi Boon Goh, and Kwan-Liu Ma. "Exploring Volume Visualization with Whole-hand Multitouch Gestures," *Pacific Graphics*, short paper, 7-10, 2013.
23. **Peng Song**, Wooi Boon Goh, William Hutama, Chi-Wing Fu, and Xiaopei Liu. "A Handle Bar Metaphor for Virtual Object Manipulation with Mid-Air Interaction," *CHI*, 1297-1306, 2012.

24. Seon Joo Kim, Hongwei Ng, Stefan Winkler, **Peng Song**, and Chi-Wing Fu. "Brush-and-Drag: A Multi-touch Interface for Photo Triaging," *MobileHCI*, 59-68, 2012.
25. William Hutama, **Peng Song**, Chi-Wing Fu, and Wooi Boon Goh. "Distinguishing Multiple Smart-Phone Interactions on a Multi-touch Wall Display using Tilt Correlation," *CHI*, 3315-3318, 2011.
26. **Peng Song**, Wooi Boon Goh, Chi-Wing Fu, Qiang Meng, and Pheng-Ann Heng. "WYSIWYF: Exploring and Annotating Volume Data with a Tangible Handheld Device," *CHI*, 1333-1342, 2011.
27. **Peng Song**, Xiaojun Wu, Michael Yu Wang, and Jianhuang Wu. "Expansion-Based Depth Map Estimation for Multi-View Stereo," *IROS*, 3213-3218, 2010.
28. **Peng Song**, Xiaojun Wu, and Michael Yu Wang. "A Robust and Accurate Method for Visual Hull Computation," *IEEE International Conference on Information and Automation (ICIA)*, 784-789, 2009.

Book Chapters

29. **Peng Song** and Xiaojun Wu. "Multi-View Stereo Reconstruction Technique." In *Depth Map and 3D Imaging Applications: Algorithms and Technologies*, chapter 2, 10-26, IGI Global, USA, 2012.

Research Grants

<i>Design, Optimization and Fabrication of Insect-like Robots</i>	2019 - 2022
SUTD Start-up Research Grant, Singapore, PI , S\$100,000	
<i>Assembly-aware Design of 3D-printable Microrobots</i>	2020 - 2021
TL@SUTD Seed Research Project Grant, Singapore, PI , S\$85,000	
<i>A Software Solution for Large Format Printing</i>	2020 - 2021
National Additive Manufacturing Innovation Cluster @ SUTD, Singapore, Co-PI , S\$100,320	
<i>Affordance-assisted Irregular Object Recognition for Service Robots</i>	2015 - 2017
National Natural Science Foundation of China, PI , ¥260,000	
<i>3D Object Grasp Planning for Service Robots</i>	2015 - 2017
Anhui Provincial Natural Science Foundation, China, PI , ¥80,000	
<i>3D Object Recognition Based on Partial Shape Matching</i>	2015 - 2016
Research Funds for the Central Universities, China, PI , ¥100,000	

Patents

<i>A Computational Approach for Constructing Interlocking Polyhedrons</i>	2019.04.26
Peng Song and Ligang Liu USTC, Chinese Patent, ZL201610418176.8	
<i>An Optimization Method for Approximating 3D shape with Convex Polyhedrons</i>	2019.04.26
Peng Song and Ligang Liu USTC, Chinese Patent, ZL201610418178.7	
<i>A Computational Approach for Designing Interlocking Structures</i>	2017.11.07
Peng Song and Ligang Liu USTC, Chinese Patent, ZL201410664520.2	

Teaching

50.017 Graphics and Visualisation, Instructor SUTD, Singapore	2020 Summer
50.034 Introduction to Probability and Statistics, Co-instructor SUTD, Singapore	2020 Spring
50.006 User Interface Design and Implementation, Coordinator, Co-instructor SUTD, Singapore	2020 Spring

CS-446 Digital Geometry Processing, Co-instructor EPFL, Switzerland	2018 Fall
001M0601 Advances in Computer Graphics, Co-instructor University of Science and Technology of China	2017 Summer
001M0601 Advances in Computer Graphics, Co-instructor University of Science and Technology of China	2014 Summer
001M1001 Introduction to Robotics Programming, Coordinator, Co-instructor University of Science and Technology of China	2014 Summer
CZ1003 Introduction to Computational Thinking, Assistant Nanyang Technological University, Singapore	2012 Fall
CZ2003 Computer Graphics and Visualization, Assistant Nanyang Technological University, Singapore	2012 Spring

Advising

Ziqi Wang PhD candidate, EPFL, Co-advised with Mark Pauly	2017.10-present
Ziyan Miao PhD candidate, SUTD, Co-advised with Ngai-Man Cheung	2020.01-present
Yucheng Sun Visiting student, SUTD & Master student, USTC	2019.11-present
Samara (Yingying) Ren Intern, EPFL & Undergraduate, UIUC	2018.06-2018.08
Hongfei Xu Master, USTC	2016-2017

Conference Talks

<i>DESIA: A General Framework for Designing Interlocking Assemblies</i> (with Ziqi Wang) ACM SIGGRAPH Asia	2018.12
<i>Computational Design of Wind-up Toys</i> ACM SIGGRAPH Asia	2017.11
<i>Reconfigurable Interlocking Furniture</i> (with Chi-Wing Fu) ACM SIGGRAPH Asia	2017.11
<i>Hand-Posture-Augmented Multitouch Interactions for Exploratory Visualization</i> ACM SIGGRAPH Asia	2016.12
<i>CofiFab: Coarse-to-Fine Fabrication of Large 3D Objects</i> (with Bailin Deng) ACM SIGGRAPH	2016.07
<i>Reciprocal Frame Structures Made Easy</i> (with Chi-Wing Fu) ACM SIGGRAPH	2013.07
<i>Recursive Interlocking Puzzles</i> ACM SIGGRAPH Asia	2012.11
<i>A Handle Bar Metaphor for Virtual Object Manipulation with Mid-Air Interaction</i> ACM CHI	2012.05
<i>WYSIWYF: Exploring and Annotating Volume Data with a Tangible Handheld Device</i> ACM CHI	2011.05

Invited Talks	<i>3D Interlocking Assemblies: Design and Applications</i>	2020.03.12
	GAMES Webinar	
	Invited by Juyong Zhang	
	<i>Computational Design of Functional Assemblies</i>	2019.10.30
	Zhejiang University, Hangzhou, China	
	Invited by Kun Zhou	
	<i>Computational Design of Functional Assemblies</i>	2019.10.29
	Nanjing University of Aeronautics and Astronautics, Nanjing, China	
	Invited by Mingqiang Wei	
	<i>Computational Design of Functional Assemblies</i>	2019.10.28
	University of Science and Technology of China, Hefei, China	
	Invited by Renjie Chen	
	<i>Computational Design of Functional Assemblies</i>	2019.10.25
	ShanghaiTech University, Shanghai, China	
Invited by Xiaopei Liu		
<i>Computational Design of Complex Assemblies</i>	2019.03.25	
University of Waterloo, Waterloo, Canada		
<i>Computational Design of Complex Assemblies</i>	2019.03.07	
University of Sydney, Sydney, Australia		
<i>Computational Design of Complex Assemblies</i>	2019.02.26	
University College London, London, UK		
Invited by Niloy J. Mitra		
<i>Computational Design of Complex Assemblies</i>	2019.02.14	
Singapore Management University, Singapore		
<i>Computational Design of Complex Assemblies</i>	2019.02.13	
Singapore University of Technology and Design, Singapore		
<i>3D Interlocking Assemblies: Design and Applications</i>	2018.08.27	
Disney Research, Zürich, Switzerland		
Invited by Moritz Bächer		
<i>Computational Design and Fabrication of Structures and Mechanisms</i>	2017.12.18	
GAMES Webinar		
Invited by Ligang Liu		
<i>An Interlocking Method for 3D Assembly Design and Fabrication</i>	2017.06.12	
EPFL, Lausanne, Switzerland		
Invited by Mark Pauly		
<i>3D Interlocking Structure Design, Fabrication, and Applications</i>	2016.11.06	
Chinagraph, Hangzhou, China		
Invited by Shi-min Hu		

Professional Services

- Program Committee Member**
- SIGGRAPH Asia 2019 Courses
 - Pacific Graphics 2019
 - CAD/Graphics 2019

- Chinagraph 2018
- CAD/Graphics 2017
- SIGGRAPH Asia 2016 Technical Brief and Poster

Section Chair

- GAMES Webinar 2018, 2017

Reviewer of Research Funding

- National Science Foundation of USA, CISE/IIS, 2018

Reviewer of Technical Paper

- SIGGRAPH
- SIGGRAPH Asia
- IEEE Visualization
- CHI
- Pacific Graphics
- ACM Transactions on Graphics
- IEEE Transactions on Visualization and Computer Graphics
- IEEE Transactions on Image Processing
- Computer Graphics Forum
- Computer Aided Geometric Design
- Graphical Models
- Computers & Graphics
- The Visual Computer
- Automation in Construction
- Robotica et al.

Press

<i>New Computational Method Provides Optimized Design of Wind up Toys</i>	2017.11
EurekAlert, By Melanie A. Farmer	
<i>3D Printed Wind-up Toys Can be Made Automatically using New Computational System</i>	2017.11
www.3ders.org, By Benedict	
<i>Algorithmic Designs of Wind-up Toys</i>	2017.11
I Programmer, By Lucy Black	
<i>16 Wild Research Experiments That Could Change Design</i>	2016.07
CO.DESIGN, By Mark Wilson	
<i>Furniture Design Swaps Glue and Screws for "Keys"</i>	2015.06
PSFK, By Jason Brick	
<i>New Auto. Software Simplifies Furniture Assemblies into Fastener-Free Flat Pack Designs</i>	2015.06
SolidSmack, By Simon Martin	
<i>This 3D Software Designs Furniture That Assembles Without Screws or Glue</i>	2015.06
GIZMODO, By Andrew Liszewski	

Awards

ACM China Rising Star Award (Hefei Region)	2016
ICIA Best Paper Award in Information	2009
Outstanding graduates of HIT (Shenzhen)	2009

Language **Chinese** (mother tongue) **English** (fluent)

References

Prof. **Mark Pauly** Postdoc Mentor
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Tel Aviv University, Israel
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