

<b>Contact Information</b>	Pillar of Information Systems Technology and Design Singapore University of Technology and Design (SUTD) 8 Somapah Rd, Singapore 487372	(+65) 64994892 <a href="mailto:peng_song@sutd.edu.sg">peng_song@sutd.edu.sg</a> <a href="https://sutd-cgl.github.io">https://sutd-cgl.github.io</a>
<b>Research Interests</b>	<b>Computer Graphics.</b> In particular, geometric modeling, computational design, and computational fabrication.	
<b>Academic Positions</b>	<b>Assistant Professor</b> Pillar of Information Systems Technology and Design Singapore University of Technology and Design, Singapore	2019 - present
	<b>Research Scientist</b> School of Computer and Communication Sciences École Polytechnique Fédérale de Lausanne, Switzerland	2017 - 2019
	<b>Associate Researcher</b> School of Computer Science and Technology University of Science and Technology of China, China	2014 - 2017
	<b>Research Fellow</b> School of Computer Science and Engineering Nanyang Technological University, Singapore	2013 - 2014
<b>Education</b>	<b>Nanyang Technological University</b> , Singapore PhD in Computer Science	2010 - 2013
	<b>Harbin Institute of Technology (Shenzhen)</b> , China Master's Degree in Control Science and Engineering	2007 - 2010
	<b>Harbin Institute of Technology</b> , China Bachelor's Degree in Automation	2003 - 2007
<b>Journal Publications (ACM TOG)</b>	<ol style="list-style-type: none"> <li>Rulin Chen, Pengyun Qiu, <b>Peng Song</b>, Bailin Deng, Ziqi Wang, and Ying He. Masonry Shell Structures with Discrete Equivalence Classes. <i>ACM Transactions on Graphics (SIGGRAPH)</i>, 42(4), Article No. 115, 2023.</li> <li>Yingjie Cheng, <b>Peng Song</b>, Yukun Lu, Wen Jie Jeremy Chew, and Ligang Liu. Exact 3D Path Generation via 3D Cam-Linkage Mechanisms. <i>ACM Transactions on Graphics (SIGGRAPH Asia)</i>, 41(6), Article No. 225, 2022.</li> <li>Rulin Chen, Ziqi Wang, <b>Peng Song</b>, and Bernd Bickel. Computational Design of High-level Interlocking Puzzles. <i>ACM Transactions on Graphics (SIGGRAPH)</i>, 41(4), Article No. 150, 2022. <b>Technical Papers Award Honorable Mention.</b></li> <li>Yingjie Cheng, Yucheng Sun, <b>Peng Song</b>, and Ligang Liu. Spatial-Temporal Motion Control via Composite Cam-follower Mechanisms. <i>ACM Transactions on Graphics (SIGGRAPH Asia)</i>, 40(6), Article No. 270, 2021.</li> <li>Ziqi Wang, <b>Peng Song</b>, and Mark Pauly. MOCCA: Modeling and Optimizing Cone-joints for Complex Assemblies. <i>ACM Transactions on Graphics (SIGGRAPH)</i>, 40(4), Article No. 181, 2021.</li> <li>Ziqi Wang, <b>Peng Song</b>, 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.</li> </ol>	

7. Ziqi Wang, **Peng Song**, and Mark Pauly. DESIA: A General Framework for Designing Interlocking Assemblies. *ACM Transactions on Graphics (SIGGRAPH Asia)*, 37(6), Article No. 191, 2018.
8. **Peng Song**, Xiaofei Wang, Xiao Tang, Chi-Wing Fu, Hongfei Xu, Ligang Liu, and Niloy J. Mitra. Computational Design of Wind-up Toys. *ACM Transactions on Graphics (SIGGRAPH Asia)*, 36(6), Article No. 238, 2017. **Featured ACM SIGGRAPH Press Release.**
9. **Peng Song\***, Chi-Wing Fu\*, Yueming Jin, Hongfei Xu, Ligang Liu, Pheng-Ann Heng, and Daniel Cohen-Or. Reconfigurable Interlocking Furniture. *ACM Transactions on Graphics (SIGGRAPH Asia)*, 36(6), Article No. 174, 2017. (\*joint 1st authors)
10. **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. *ACM Transactions on Graphics (SIGGRAPH)*, 35(4), Article No. 45, 2016.
11. 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)*, 34(4), Article No. 91, 2015. (\*joint 1st authors)
12. **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)
13. **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 (TVCG, CGF)

14. Zebin Chen, **Peng Song**, and F. Peter Ortner. Hierarchical Co-generation of Parcels and Streets in Urban Modeling. *Computer Graphics Forum (Eurographics)*, 43(2), accepted, 2024.
15. Zhenyuan Liu, Jingyu Hu, Hao Xu, **Peng Song**, Ran Zhang, Bernd Bickel, and Chi-Wing Fu. Worst-case Rigidity Analysis and Optimization for Assemblies with Mechanical Joints. *Computer Graphics Forum (Eurographics)*, 41(2), 507 - 519, 2022.
16. Yucheng Sun, Wenqing Ouyang, Zhongyuan Liu, Ning Ni, Yann Savoye, **Peng Song**, and Ligang Liu. Computational Design of Self-actuated Deformable Solids via Shape Memory Material. *IEEE Transactions on Visualization and Computer Graphics*, 28(7), 2577 - 2588, 2022.
17. Ziqi Wang, **Peng Song**, Mark Pauly. State of the Art on Computational Design of Rigid Assemblies. *Computer Graphics Forum (Eurographics)*, 40(2), 633 - 657, 2021. **State-of-the-Art Report.**
18. 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.
19. 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.
20. 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.

#### Journal Publications (additional)

21. Keke Tang, Yuhong Chen, Weilong Peng, Yanling Zhang, Meie Fang, Zheng Wang, and **Peng Song**. RepPVConv: Attentively Fusing Reparameterized Voxel Features for Efficient 3D Point Cloud Perception. *The Visual Computer*, 39, 5577 - 5588, 2023.
22. **Peng Song**. Interlocking Assemblies: Applications and Methods. *Materials Today: Proceedings (International Conference on Additive Manufacturing for a Better World)*, 70, 78 - 82, 2022.

23. Keke Tang, Yuexin Ma, Dingrui Miao, **Peng Song**, Zhaoquan Gu, Zhihong Tian, and Wenping Wang. Decision Fusion Networks for Image Classification. *IEEE Transactions on Neural Networks and Learning Systems*, 1 - 14, 2022.
24. **Peng Song**, Zhongqi Fu, and Ligang Liu. Grasp Planning via Hand-Object Geometric Fitting. *The Visual Computer*, 34(2), 257-270, 2018.
25. 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.
26. **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.
27. **Peng Song**. Local Voxelize: A Shape Descriptor for Surface Registration. *Computational Visual Media*, 1(4), 279-289, 2015.
28. **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.
29. JingZhi Tay, F. Peter Ortner, **Peng Song**, Anna Claudia Yenardi, and Zebin Chen Design Space Recommendation: Assisting Users to Manage Complexity in Urban Design Optimisation. *International Conference on Computer-Aided Architectural Design Futures*, 333 - 344, 2023.
30. Keke Tang, Jianpeng Wu, Weilong Peng, Yawen Shi, **Peng Song**, Zhaoquan Gu, Zhihong Tian, and Wenping Wang. Deep Manifold Attack on Point Clouds via Parameter Plane Stretching. *AAAI*, 2420 - 2428, 2023.
31. **Peng Song**, Ziqi Wang, and Marco Livesu. Computational Assemblies: Analysis, Design and Fabrication. *Eurographics*, Tutorial, 2022.
32. **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)
33. Keke Tang, **Peng Song**, and Xiaoping Chen. Signature of Geometric Centroids for 3D Local Shape Description and Partial Shape Matching. *ACCV*, 311-326, 2016.
34. 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.
35. 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.
36. **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.
37. 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.
38. 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.
39. **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.
40. **Peng Song**, Xiaojun Wu, Michael Yu Wang, and Jianhuang Wu. Expansion-Based Depth Map Estimation for Multi-View Stereo. *IROS*, 3213-3218, 2010.
41. **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.

## Conference Publications

<b>Research Grants</b>	<i>3D Geometric Tiling for Modeling and Realization of 3D Tileable Assemblies</i> MOE Academic Research Fund (AcRF) Tier 2, Singapore, <b>PI</b> , S\$671,592	2024 - 2027
	<i>Modeling and Design of 3D Freeform Gears for Exact 3D Motion Generation</i> MOE Academic Research Fund (AcRF) Tier 2, Singapore, <b>PI</b> , S\$493,323	2023 - 2026
	<i>Design, Fabrication, and Evaluation of Custom-fit PAP Masks for Patients with Sleep-disordered Breathing</i> CGH – SUTD HealthTech Innovation Fund, Singapore, <b>PI</b> , S\$250,000	2022 - 2024
	<i>Novel Cam-Linkage Mechanisms for 3D-Printable Microrobots in Challenging Environments</i> TL@SUTD Seed Research Project Grant, Singapore, <b>PI</b> , S\$85,000	2022
	<i>Assembly-aware Design of 3D-printable Microrobots</i> TL@SUTD Seed Research Project Grant, Singapore, <b>PI</b> , S\$85,000	2020 - 2021
	<i>Design, Optimization and Fabrication of Insect-like Robots</i> SUTD Start-up Research Grant, Singapore, <b>PI</b> , S\$100,000	2019 - 2022
	<i>Affordance-assisted Irregular Object Recognition for Service Robots</i> National Natural Science Foundation of China, China, <b>PI</b> , ¥260,000	2015 - 2017
<b>Teaching</b>	50.017 Graphics and Visualisation, <b>Instructor</b> SUTD, Singapore	2024, 2023, 2022, 2021, 2020
	50.052 Extended Reality, <b>Instructor</b> SUTD, Singapore	2023
	10.020 Data Driven World, <b>Instructor</b> SUTD, Singapore	2023, 2022, 2021
	50.034 Introduction to Probability and Statistics, <b>Instructor</b> SUTD, Singapore	2020
	50.006 User Interface Design and Implementation, <b>Instructor</b> SUTD, Singapore	2020
<b>Advising</b>	<b>PhD Student</b>	
	• Siqi Li	2023 - present
	• Rulin Chen	2021 - present
	• Yingjie Cheng (co-advised with Prof. Ligang Liu)	2020 - 2023
	• Ziqi Wang (co-advised with Prof. Mark Pauly)	2017 - 2021
	<b>Research Assistant</b>	
	• Pengyun Qiu	2022 - present
	• Zebin Chen	2022 - present
	• Praveer Tewari	2023
	• Chao Ning	2020
	<b>Visiting Student</b>	
	• Yuhang Wang	2023 - present
	• Yukun Lu	2022 - 2023
	• Donglin Hu	2022
	• Yingjie Cheng	2021 - 2022
	• Yucheng Sun	2019 - 2021
	<b>Undergraduate Researcher</b>	
	• Chew Wen Jie Jeremy	2021 - 2022

<b>Keynote Talks</b>	<i>Computational Design of Geometric Puzzles</i> Symposium on Solid and Physical Modeling (SPM)	2022.06.28
<b>Invited Talks</b>	<i>Computational Design of Geometric Puzzles</i> Asiagraphics Web Seminar	2023.03.28
	<i>Optimization Algorithms for AI-based Design</i> Raffles Institution's Gap Semester Event, Singapore	2022.08.22
	<i>Computational Assemblies for Digital Fabrication</i> GAMES Webinar	2022.06.02
	<i>Computational Design of Mechanisms</i> Computational Fabrication Seminar	2022.04.21
	<i>Computational Assemblies for Digital Fabrication</i> Regular Seminar Series of Cardiff University	2022.03.2
	<i>Path Generation Mechanism Modeling and Optimization</i> International Symposium on Intelligence Design (ISID)	2022.03.15
	<i>Structurally Stable Assemblies: Theory, Algorithms, and Applications</i> CUHK Regular Department Seminar Series	2021.07.20
	<i>Computational Design of Complex Assemblies</i> DManD Symposium, SUTD, Singapore	2020.09.01
	<i>3D Interlocking Assemblies: Design and Applications</i> GAMES Webinar	2020.03.12
	<i>Computational Design of Functional Assemblies</i> Zhejiang University, Hangzhou, China	2019.10.30
	<i>Computational Design of Functional Assemblies</i> University of Science and Technology of China, Hefei, China	2019.10.28
	<i>Computational Design of Complex Assemblies</i> University of Waterloo, Waterloo, Canada	2019.03.25
	<i>Computational Design of Complex Assemblies</i> University of Sydney, Sydney, Australia	2019.03.07
	<i>Computational Design of Complex Assemblies</i> University College London, London, United Kingdom	2019.02.26
	<i>3D Interlocking Assemblies: Design and Applications</i> Disney Research, Zürich, Switzerland	2018.08.27
	<i>An Interlocking Method for 3D Assembly Design and Fabrication</i> EPFL, Lausanne, Switzerland	2017.06.12
	<i>CofiFab: Coarse-to-Fine Fabrication of Large 3D Objects</i> Shenzhen University, Shenzhen, China	2016.04.01

<b>Professional Services</b>	<b>Editorial Board of Academic Journals</b>	
	• Computers & Graphics, Associate Editor	2024 - present
	• Graphical Models, Associate Editor	2024 - present
	<b>Research Event Organizer</b>	
	• Computational Fabrication Seminar	2022, 2021
	<b>Executive Committee Member</b>	
	• Asiagraphics	2022 - present
	<b>Program Committee Member</b>	
	• Symposium on Geometry Processing (SGP)	2024
	• Symposium on Solid and Physical Modeling (SPM)	2024, 2023, 2022
	• Geometric Modeling and Processing (GMP)	2024
	• Computational Visual Media (CVM)	2024, 2023
	• SIGGRAPH Asia - Technical Papers	2023
	• Computer Graphics International (CGI)	2023
	• CAD/Graphics	2023, 2021, 2019, 2017
	• Pacific Graphics	2019
	• SIGGRAPH Asia - Courses	2019
	• SIGGRAPH Asia - Technical Brief and Poster	2016
<b>Awards</b>	SIGGRAPH Technical Papers Award Honorable Mention	2022
	ACM China Rising Star Award (Hefei Region)	2016
	ICIA Best Paper Award in Information	2009
	Outstanding graduates of HIT (Shenzhen)	2009
<b>References</b>	Prof. <b>Jianmin Zheng</b>	Collaborator
	School of Computer Science and Engineering Nanyang Technological University, Singapore E-mail: <a href="mailto:asjmzheng@ntu.edu.sg">asjmzheng@ntu.edu.sg</a>	
	Prof. <b>Chi-Wing Fu</b>	PhD Advisor
	Department of Computer Science and Engineering The Chinese University of Hong Kong, Hong Kong E-mail: <a href="mailto:philip.chiwing.fu@gmail.com">philip.chiwing.fu@gmail.com</a>	
	Prof. <b>Mark Pauly</b>	Collaborator
	School of Computer and Communication Sciences École Polytechnique Fédérale de Lausanne, Switzerland E-mail: <a href="mailto:mark.pauly@epfl.ch">mark.pauly@epfl.ch</a>	
	Prof. <b>Niloy J. Mitra</b>	Collaborator
	Department of Computer Science University College London, United Kingdom E-mail: <a href="mailto:niloyM@gmail.com">niloyM@gmail.com</a>	
	Prof. <b>Daniel Cohen-Or</b>	Collaborator
	School of Computer Science Tel Aviv University, Israel E-mail: <a href="mailto:cohenor@gmail.com">cohenor@gmail.com</a>	