

Rulin Chen

Postdoctoral Fellow at **S**ingapore **U**niversity of **T**echnology and **D**esign (SUTD)

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Research Interest

Computer Graphics. In particular, geometric modeling, computational design, and computational fabrication. Currently focus on developing computational methods for sustainable designs in various forms and functionalities.

Education and Working Experience

2024.8 – now	Postdoctoral Research Fellow Advisor: Peng Song	Computer Graphics Laboratory, SUTD
2020.9 – 2024.7	Ph.D. in Computer Graphics Advisor: Peng Song	Computer Graphics Laboratory, SUTD
2019.9 – 2020.7	Visiting Student	The Chinese University of Hong Kong
2016.9 – 2020.7	B.S. in Electronic Information Engineering	Shantou University

Publication

7. **Rulin Chen**, Praveer Tewari, Peng Song, and Chi-Wing Fu. Inverse Tiling of Finite Domains. *ACM Transactions on Graphics*, 2024. (under review)
6. Pengyun Qiu[†], **Rulin Chen**[†] (co-first author), Peng Song, and Ying He. Modeling Wireframe Meshes with Discrete Equivalence Classes. *IEEE Transactions on Visualization and Computer Graphics*, 2024. (under review)
5. **Rulin Chen**, Pengyun Qiu, Peng Song, Bailin Deng, Ziqi Wang, and Ying He. Masonry Shell Structures with Discrete Equivalence Classes. *ACM Transactions on Graphics* (SIGGRAPH 2022 Journal-track), 42(4), 2023.
4. **Rulin Chen**, Ziqi Wang, Peng Song, and Bernd Bickel. Computational Design of High-level Interlocking Puzzles. *ACM Transactions on Graphics* (SIGGRAPH 2023 Journal-track), 41(4), 2022. **SIGGRAPH Best Paper Honorable Mention Award**
3. Chuliang Wei, **Rulin Chen**, Qian Gao, Zhenglong Sun. FPGA-based Hardware Acceleration for CNNs developed using High-level Synthesis. *Optics and Precision Engineering*, vol. 5, 1212-1219, 2020.
2. Chuliang Wei, **Rulin Chen**, Qin Xin. FPGA Design of Real-time MDFD System using High-level Synthesis. *IEEE Access*, vol. 7, pp. 83664-83672, 2019.
1. **Rulin Chen**, Alex Noel Joseph Raj, Xun Ma, Zhemin Zhuang. Shape Reconstruction from a Monocular Defocus Image using CNN. *Proceedings of the 2019 Intelligent Systems Conference (IntelliSys)*, 821-831, 2019.

Open-source Software

HighLevel-Puzzle

Author

A C++ based computational tool for designing high-level interlocking puzzles with user-specified level-of-difficulties.

TileableShell

Author

A C++ based computational tool for modeling masonry shell structures with discrete equivalence classes with user-specified topology.

Award

2022.8 **SIGGRAPH 2022 Best Paper Honorable Mention Award**

2020.3 **SUTD PhD Fellowship**

2016 – 2018 **Shantou University Sports-meeting Champion Scholarship**

Patent

6. Jiahao Fang, Qian Gao, Yanwei Huang, Wei Xiao, **Rulin Chen**, and Zhenglong Sun. Aircraft Luggage Loading and Unloading Robot, CN212710041 (U).
5. Qian Gao, Jiahao Fang, Yanwei Huang, **Rulin Chen**, Wei Xiao, and Zhenglong Sun. Natural Cavity Surgical Mechanical Arm, CN212326570 (U).
4. Qian Gao, Jiahao Fang, Yanwei Huang, **Rulin Chen**, Wei Xiao, and Zhenglong Sun. Natural Orifice Operation Mechanical Arm, CN111419404 (A).
3. Qian Gao, Wei Xiao, **Rulin Chen**, Jiahao Fang, Yanwei Huang, and Zhenglong Sun. End Effector for Natural Orifice Surgery, CN111407412 (A).
2. Jiahao Fang, Qian Gao, Yanwei Huang, Wei Xiao, **Rulin Chen**, and Zhenglong Sun. Aircraft Luggage Loading and Unloading Robot and Control Method Thereof, CN111392060 (A).
1. Qian Gao, **Rulin Chen**, Jiahao Fang, Yanwei Huang, Wei Xiao, and Zhenglong Sun. Power Battery with Positive and Negative Electrodes of Battery Cell Welded on the Same Side, CN111403639 (A).

Teaching

- 2024.8 **Research Mentor** (2 students without computer graphics background) Remote
MIT Summer Geometry Initiative 2024
Project: Modeling K-set Surfaces with Various Patterns
- 2021 – 2023 **Teaching Assistant** (~ 30 students per year) SUTD, Singapore
Graphics and Visualisation (50.017)
- 2022.8 **Student Facilitator** (~ 40 students) SUTD, Singapore
FACT Undergraduate Exchange Programme

Professional Service

Journal Reviewer

ACM Transactions on Graphics 2024
Computers & Graphics 2024
The Visual Computer 2023

Conference Reviewer

ACM SIGGRAPH Asia 2024
Pacific Graphics 2024
Computer Graphics International 2023

Research Activity Organizer

Co-organizer of Computational Fabrication Seminar 2021, 2022

Invited Talks

2024.6	PhD Oral Defense Public Seminar	SUTD
2024.5	Huawei Singapore Harmony Software Technology Workshop	Huawei Singapore
2023.8	Technical Paper Presentation	SIGGRAPH 2023
2022.8	Technical Paper Presentation	SIGGRAPH 2022
2022.8	Lab Demo	SIGGRAPH 2022

Reference

Ph.D. Advisor Dr. Peng Song, Assistant Professor at SUTD
Email: peng_song@sutd.edu.sg

Collaborator Dr. Bernd Bickel, Full Professor at ETH Zurich
Email: bernd.bickel@gmail.com

Collaborator Dr. Ying He, Associate Professor at NTU
Email: yhe@ntu.edu.sg

Collaborator Dr. Ziqi Wang, Postdoctoral Fellow at EPFL Zurich, Incoming Assistant Professor at HKUST
Email: ziqi.wang@epfl.ch