

# Caigui Jiang | Curriculum Vitae

Visual Computing Center, – King Abdullah University of Science and Technology

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## Research Interest

My research interests lie primarily in geometry processing, architectural geometry, computer graphics and computer vision.

## Education

- **King Abdullah University of Science and Technology** **Thuwal, KSA**  
*Ph.D in computer science, GPA – 3.92/4.0* *Aug.2011–Jun.2016*  
Supervisors: Prof. Helmut Pottmann & Prof. Peter Wonka
- **Xi'an Jiaotong University** **Xi'an, China**  
*MS in Pattern Recognition and Intelligence Systems, GPA – 88.9/100* *Sep.2008–Jul.2011*
- **Xi'an Jiaotong University** **Xi'an, China**  
*BS in Electronic Engineering, GPA – 85.0/100* *Sep.2004–Jul.2008*

## Experience

- **King Abdullah University of Science and Technology** **Thuwal, KSA**  
*Research Scientist* *2019.1–present*
- **ICSI, UC Berkeley** **Berkeley, USA**  
*Research Scientist* *2018.2–2019.1*
- **Max Planck Institute for Informatics** **Saarbrücken, Germany**  
*Postdoc Researcher* *2016.8–2018.1*
- **King Abdullah University of Science and Technology** **Thuwal, KSA**  
*Research assistant* *2011–2016*
- **Microsoft Research Asia** **Beijing, China**  
*Research Intern* *Summer, 2015*
- **Vienna University of Technology** **Vienna, Austria**  
*Research Intern* *Summer, 2012*
- **Xi'an Jiaotong University** **Xi'an, China**  
*Research assistant* *2008–2011*

## Publications

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- **Freeform Quad-based Kirigami** 2020  
*ACM Transactions on Graphics, SIGGRAPH Asia 2020*  
Caigui Jiang, Florian Rist, Johannes Wallner, Helmut Pottmann
- **Computational design and optimization of quad meshes based on diagonal meshes** 2020  
*Advances in Architectural Geometry 2020 (accepted)*  
Caigui Jiang, Cheng Wang, Eike Schling, Helmut Pottmann
- **Architectural freeform surfaces designed for cost-effective paneling through mold re-use** 2020  
*Advances in Architectural Geometry 2020 (accepted)*  
Davide Pellis, Hui Wang, Martin Kilian, Caigui Jiang, Christian Muller, Helmut Pottmann
- **Quad-Mesh Based Isometric Mappings and Developable Surfaces** 2020  
*ACM Transactions on Graphics, SIGGRAPH 2020*  
Caigui Jiang, Cheng Wang, Florian Rist, Johannes Wallner, Helmut Pottmann
- **Smooth Polyhedral Surfaces** 2020  
*Advances in Mathematics, 363, 2020*  
Felix Günther, Caigui Jiang, Helmut Pottmann
- **Curve-pleated Structures** 2019  
*ACM Transactions on Graphics, SIGGRAPH Asia 2019*  
Caigui Jiang, Klara Mundilova, Florian Rist, Johannes Wallner, Helmut Pottmann
- **Checkerboard Patterns with Black Rectangles** 2019  
*ACM Transactions on Graphics, SIGGRAPH Asia 2019*  
Chi-Han Peng\*, Caigui Jiang\*, Peter Wonka, Helmut Pottmann (\*joint first authors)
- **Ultimate Force Boundary of Trusses** 2019  
*IASS Symposium 2019*  
Caigui Jiang
- **Field-Aligned Isotropic Surface Remeshing** 2018  
*Computer Graphics Forum 37, 6. (presented at Eurographics 2018)*  
Xingyi Du, Xiaohan Liu, Dong-Ming Yan, Caigui Jiang, Juntao Ye, Hui Zhang.
- **Polyhedral Meshes with Concave Faces** 2017  
*SIGGRAPH Asia Posters 2017, Article No. 36.*  
Caigui Jiang, Renjie Chen
- **Design and Volume Optimization of Space Structures** 2017  
*ACM Transactions on Graphics, SIGGRAPH 2017.*  
Caigui Jiang, Chengcheng Tang, Hans-Peter Seidel, Peter Wonka
- **Measuring and Controlling Fairness of Triangulations** 2016  
*Advances in Architectural Geometry 2016 (Best paper award)*  
Caigui Jiang, Felix Günther, Johannes Wallner, Helmut Pottmann
- **Vertex Normals and Face Curvatures of Triangle Meshes** 2016  
*In A. I. Bobenko, editor, Advances in Discrete Differential Geometry. Springer*  
Xiang Sun, Caigui Jiang, Johannes Wallner, Helmut Pottmann

- **Polyhedral Patterns** 2015  
*ACM Transactions on Graphics.*  
**Caigui Jiang**, Chengcheng Tang, Amir Vaxmann, Peter Wonka, Helmut Pottmann
- **Freeform Honeycomb Structures and Lobel Frames** 2015  
*SIGGRAPH Posters 2015, Article No. 75.*  
**Caigui Jiang**, Chengcheng Tang, Jun Wang, Johannes Wallner, Helmut Pottmann
- **Template Assembly for Detailed Urban Reconstruction** 2015  
*Computer Graphics Forum (Proc. Eurographics 2015) 34,2.*  
 Liangliang Nan, **Caigui Jiang**, Bernard Ghanem, Peter Wonka
- **Cell Packing Structures** 2015  
*Computer-Aided Design 60 (2015), 70-83.*  
 Helmut Pottmann, **Caigui Jiang**, Mathias Höbinger, Jun Wang, Philippe Bompas, Johannes Wallner.
- **Interactive Modeling of Architectural Freeform Structures** 2014  
*Advances in Architectural Geometry 2014, London, UK.*  
**Caigui Jiang**, Chengcheng Tang, Marko Tomicic, Johannes Wallner, Helmut Pottmann.
- **Freeform Honeycomb Structures** 2014  
*Computer Graphics Forum (Proc. SGP 2014) 33,5.*  
**Caigui Jiang**, Jun Wang, Johannes Wallner, Helmut Pottmann.
- **Exploring Quadrangulations** 2014  
*ACM Transactions on Graphics 33, 1.*  
 Chi-Han Peng, Michael Barton, **Caigui Jiang**, and Peter Wonka.
- **Freeform Shading and Lighting Systems from Planar Quads** 2013  
*Design Modelling Symposium Berlin 2013, Germany.*  
**Caigui Jiang**, Jun Wang, Philippe Bompas, Johannes Wallner, Helmut Pottmann.
- **Discrete Line Congruences for Shading and Lighting** 2013  
*Computer Graphics Forum (Proc. SGP 2013) 32,5.*  
 Jun Wang, **Caigui Jiang**, Philippe Bompas, Johannes Wallner, Helmut Pottmann.

## Selected Talks

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- **Curved-pleated Structures** Brisbane, Australia  
*SIGGRAPH Asia 2019* Nov. 2019
- **Design and Volume Optimization of Space Structures** LA, USA  
*SIGGRAPH 2017* Aug. 2017
- **Geometric Rationalization for Free-form Architecture** MPII, Germany  
*invited by Prof. Hans-Peter Seidel & Dr. Renjie Chen* Mar. 2016
- **Polyhedral Patterns** Kobe, Japan  
*SIGGRAPH Asia 2015* Nov. 2015
- **Geometric Rationalization for Free-form Architecture** EPFL, Switzerland  
*invited by Prof. Mark Pauly* Apr. 2015

- **Interactive Modeling of Architectural Freeform Structures** **London, UK**  
*Advances in Architectural Geometry 2014* *Oct. 2014*
- **Freeform Honeycomb Structures** **Cardiff, UK**  
*SGP 2014* *Jul. 2014*
- **Hexagonal torsion-free structures** **Paris, France**  
*Curves and Surfaces 2014* *Jun. 2014*
- **Discrete Line Congruences for Shading and Lighting** **Berlin, Germany**  
*Design Modelling Symposium 2013* *Oct. 2013*

## Skills

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- **Programming:** C/C++, Matlab, Pov-Ray, Rhino script,  $\text{\LaTeX}$
- **API:** OpenGL, OpenMesh, OpenCV, Qt
- **Software Tools:** *Modeling:* Rhinoceros, 3ds Max. *Rendering:* Pov-Ray, Keyshot, V-ray.
- **Language:** Chinese (native), English

## Professional Activities

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- **Membership:** ACM, IEEE, IASS
- **Reviewer:** SIGGRAPH, SIGGRAPH Asia, SPM, CAD, IEEE CGA, Computer & Graphics, Graphical Models

## References

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- **Prof. Helmut Pottmann:** Full Professor, KAUST and TU Wien, Austria
- **Prof. Hans-Peter Seidel:** Full Professor, Director of Max Planck Institute for Informatics, Germany
- **Prof. Peter Wonka:** Full Professor, KAUST, Saudi Arabia
- **Prof. Johannes Wallner:** Full Professor, TU Graz, Austria
- **Dr. Yang Liu:** Lead researcher, Microsoft Research Asia, Beijing, China