

HAN ZHANG

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[han10th.github.io](https://github.com/han10th)

EDUCATION

City University of Hong Kong, Hong Kong

Department of Mathematics

Supervised by [Raymond H. CHAN](#),

co-supervised by [Xue-Cheng TAI](#) and [Jean-Michel Morel](#)

Ongoing

Ph.D. in Mathematics

Chinese University of Hong Kong, Hong Kong

Department of Mathematics

Supervised by [Lok Ming LUI](#)

July 2020

M.Phil. in Mathematics

Sun Yat-Sen University, Guangzhou

School of Mathematics

June 2018

B.Sc. in Computational Science

RESEARCH INTEREST

Computational Fluid Mechanics: Fluid-Structure Interaction, Blood Flow Simulation

Computational Differential Geometry: Geometric Deep Learning, Deformable Model

Scientific Machine Learning: PINN method, Neural Networks

Image Science: Image Segmentation, Interactive Segmentation

VISITING SCHOLAR

Princeton University: Hosted by Prof. Guillermo Sapiro.

Sep. — Oct. 2025

Emory University : Hosted by Prof. Yuanzhe Xi.

Oct. 2025

JOURNAL PUBLICATIONS

^Tdenotes the corresponding author.

*denotes the equal contribution.

1. Fluid Dynamics and Domain Reconstruction from Noisy Flow Images Using Physics-Informed Neural Networks and Quasi-Conformal Mapping.

Han Zhang^T, Xue-Cheng Tai, Jean-Michel Morel, Raymond H. Chan

Submitted to *SIAM Journal of Imaging Science (SIIS)*.

[AI4PDE project]

2. Circular Image Deturbulence using Quasi-conformal Geometry.

Chu Chen, **Han Zhang**, Lok Ming Lui^T

Submitted to *Neural Network (NN)*

[Geometric Image project]

3. Quasi-Conformal Convolution: A General Geometric Convolution Neural Network on Manifold Learning.

Han Zhang, Tsz Lok Ip, Lok Ming Lui^T

Submitted to *SIAM Journal of Imaging Science (SIIS)*.

[Geometric Image project]

4. Parametrized Sampling for 3D Blood Simulation in Deformable Vessels Using Physics-Informed Neural Networks.
Han Zhang, Lingfeng Li, Xue-Cheng Tai^T, Raymond H. Chan
 Submitted to *Journal of Computational and Applied Mathematics (JCAM)*.
 [AI4PDE project]
5. Deformation-Invariant Neural Network and Its Applications on Image Classification and Restoration.
Han Zhang, Qiguang Chen, Lok Ming Lui^T
 Accepted by *Neural Network (NEU NET)*, 2025.
 [Geometric Image project]
6. Full 3D Blood Flow Simulation in Curved Deformable Vessels Using Conditional Physics-Informed Neural Networks.
Han Zhang, Xue-Cheng Tai^T
 Accepted by *Acta Mathematica Universitatis Comenianae (AMUC)*, 2024.
 [AI4PDE project]
7. QIS : Interactive Segmentation via Quasi-Conformal Mappings.
Han Zhang, Daoping Zhang, Lok Ming Lui^T
 Accepted by *SIAM Journal of Imaging Science (SIIS)*, 2024.
 [Geometric Image project]
8. A Meshless Solver for Blood Flow Simulations in Elastic Vessels Using Physics-Informed Neural Network.
Han Zhang, Raymond H. Chan, Xue-Cheng Tai^T
 Accepted by *SIAM Journal of Scientific Computing (SISC)*, 2024.
 [AI4PDE project]
9. A Learning-based Framework for Topology-Preserving Segmentation using Quasiconformal Mappings.
Han Zhang, Lok Ming Lui^T
 Accepted by *Neurocomputing (NEUCOMP)*, 2024.
 [Geometric Image project]
10. Continuous Aerial Path Planning for 3D Urban Scene Reconstruction.
Han Zhang, Yucong Yao, Ke Xie, Chi-Wing Fu, Hao Zhang, Hui Huang^T.
 Accepted by *ACM Transaction on Computer Graphics (ACM TOG, SIGGRAPH ASIA)*, 2021.
 [Graphics]

PROCEEDING PUBLICATIONS

1. Fast Physics-Informed Learning via Diffusion Hypernetworks.
 Yuzhou Zhao, **Han Zhang**^T, J. Matias Di Martino, Jean-Michel Morel, Guillermo Sapiro
 Submitted
 [AI4PDE project]
2. Nondeterministic Deformation analysis using Quasiconformal Geometry.
Han Zhang, Lok Ming Lui^T
 Accepted by *IEEE International Conference on Image Processing (ICIP)*, 2022.
 [Geometric Image project]

ACADEMIC ACHIEVEMENTS

Outstanding Academic Performance Award, 2024

Excellent Student Scholarship of Sun Yat-Sen University, 2017

First Class

Excellent Thesis of Sun Yat-Sen University, 2018
China Undergraduate Mathematical Contest in Modeling, 2016
National High School Mathematics League, 2012

*Outstanding
Second Prize
Second Prize*

INVITED TALKS

1. **[1-hour Invited Talk]** Physics-Informed Neural Network for Blood Flow Simulation :
Forward and Inverse Problem
Emory University - CODES Seminar, Atlanta, USA *Oct. 2025*

REVIEW

Computer Graphics Forum
Neural Networks
Neurocomputing