

HAN ZHANG

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han10th.github.io

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

Emory University : Hosted by Prof. Yuanzhe Xi.

Oct. 2025

Princeton University: Hosted by Prof. Guillermo Sapiro.

May 2025 — 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 Deturbation using Quasi-conformal Geometry.
Chu Chen, **Han Zhang**, Lok Ming Lui^T
Submitted to *Neural Network (NN)*
[Geometric Image project]
3. 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
Accepted by *Journal of Computational and Applied Mathematics (JCAM)*.
[AI4PDE project]

4. Quasi-Conformal Convolution : A Learnable Convolution for Deep Learning on Simply Connected Open Surfaces.
Han Zhang, Tsz Lok Ip, Lok Ming Lui^T
Accepted by *SIAM Journal of Imaging Science (SIIS)*.
[Geometric Image 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 Outstanding
China Undergraduate Mathematical Contest in Modeling, 2016 Second Prize
National High School Mathematics League, 2012 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

1. Neural Networks
 2. Neurocomputing
 3. Medical Image Analysis
 4. Computer Graphics Forum

TEACHING EXPERIENCE

* denotes courses with duty of a weekly one-hour instructional session.

City University of Hong Kong

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|---|--------------|
| 1. MA1200 Calculus & Basic Linear Algebra I* | Spring, 2025 |
| 2. MA1201 Calculus & Basic Linear Algebra II* | Spring, 2025 |
| 3. MA2177 Engineering Mathematics and Statistics* | Fall, 2024 |
| 4. MA1200 Calculus & Basic Linear Algebra I* | Spring, 2024 |
| 5. MA1200 Calculus & Basic Linear Algebra I* | Fall, 2023 |
| 6. GE1359/MA1502 Algebra | Spring, 2023 |

Chinese University of Hong Kong

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|-------------------------------------|---------------------|
| 1. MATH1010 University Mathematics | <i>Spring, 2020</i> |
| 2. MATH1510B Calculus for Engineers | <i>Fall, 2019</i> |
| 3. MATH4250 Game Theory | <i>Spring, 2019</i> |
| 4. MATH1510B Calculus for Engineers | <i>Fall, 2018</i> |