

HAN ZHANG

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EDUCATION

The Chinese University of Hong Kong, Hong Kong Department of Mathematics	<i>August 2018 - July 2020</i> Master of Philosophy
Sun Yat-Sen University, Guangzhou School of Mathematics	<i>August 2014 - June 2018</i> Bachelor of Science

RESEARCH INTEREST

Computational Geometry Scientific Computing Geometry Processing

ACADEMIC EXPERIENCE

The Key Laboratory of Computational Science of Guangdong Province <i>Part-Time Research Assistant</i>	<i>September 2016 - April 2018</i> <i>Guangzhou, CHINA</i>
· Research on medical images supervised by Prof.Ying JIANG. Especially on finding a new approach for CT reconstruction through wavelet basis.	
Faculty of Mathematics, The Chinese University of Hong Kong <i>Research Assistant</i>	<i>August 2018 - July 2020</i> <i>Hong Kong, CHINA</i>
· Research on computational geometry and deep learning. Supervised by Lok Ming LUI	
Department of Computer Science, Shenzhen University <i>Research Intern</i>	<i>June 2020 - PRESENT</i> <i>Shenzhen, CHINA</i>
· Research on scene reconstruction and path planning. Work with Hui Huang	

PROJECTS

CT image reconstruction <i>with Ying JIANG</i>	<i>February 2017 - January 2018</i> Sun Yat-Sen University
Use wavelet bases to approximately discrete partial Radon transform which is a critical step in CT image reconstruction. Since products between wavelet bases can be pre-computed, the reconstruction process can be noticeably speed up. By the independent computation for individual wavelets bases, it's also possible to use parallel computing technique.	
Quasi-Conformal Network <i>with Lok Ming LUI</i>	<i>October 2019 - September 2020</i> The Chinese University of Hong Kong
In medical images, non-uniform intensity distribution may degrade the registration result obtained by intensity. Thus, landmark-based approach is particular important. We build up a network with quasi-conformal theory to preserve the topology of images which is a very important property for medical images. Furthermore, with the information provided by training data, the network could thus be structure known so that produce medicine meaningful registration. (submitted)	
QC-Transformer Network <i>with Lok Ming LUI</i>	<i>April 2020 - PRESENT</i> The Chinese University of Hong Kong
Spatial Transformer Network introduced spatial invariance to neural network. Topology preserving may fail in some cases. To solve this, we proposed Quasi-Conformal Transformer Network which can deal with extreme geometric distortion while preserve the topology of the transformation.	
Continuous Path Planning for Reconstruction <i>with Hui HUANG</i>	<i>July 2020 - PRESENT</i> Shenzhen University
To reconstruct a complete scene, images of objective region should be captured by drones. Works like Plan3D(ToG18) and OffsiteAerial(Sig Asia20) are all points-based planning strategy. Such planning will brings lots of extra battery consumption, since it doesn't account for possible information gain alone path and extra cost for sharp turns. To do planning alone trajectories continuously, we proposed a RRT* approach to find a optimized trajectory that drones can take enough images alone. Besides, with a pre-computed informative field of the free space, the planning time are shortened noticeably.	

PUBLICATIONS

Continuous Aerial Path Planning for 3D Urban Scene Reconstruction. Han Zhang , Yucong Yao, Ke Xie, Chi-Wing Fu, Hao Zhang, Hui Huang. (In submission).
Quasi-Conformal Neural Network (QC-net) with Applications to Shape Matching. Han Zhang (MPhil thesis)

ACADEMIC ACHIEVEMENTS

Excellent Student Scholarship of Sun Yat-Sen University	<i>First Class</i>
Excellent Thesis of Sun Yat-Sen University	<i>Outstanding</i>
China Undergraduate Mathematical Contest in Modeling	<i>Second Prize</i>
National High School Mathematics League	<i>Second Prize</i>

EXTRA-CURRICULAR

Institute of Computing Technology, Chinese Academy of Sciences <i>Outstanding Student of 'Computing Future' summer training class</i>	<i>July 2017</i> <i>Beijing, CHINA</i>
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Department of Mathematics, The Chinese University of Hong Kong <i>Visiting Student</i>	<i>October 2017</i> <i>Hong Kong, CHINA</i>
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Department of Mathematics, The Chinese University of Hong Kong <i>Teaching Assistant</i>	<i>August 2018 - August 2020</i> <i>Hong Kong, CHINA</i>
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TECHNICAL STRENGTHS

Programming Languages C++, MATLAB, PYTHON, CGAL...