

# XIAOWEI HU

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## EDUCATION

**The Chinese University of Hong Kong (CUHK)**

Ph.D. in Computer Science and Engineering

Advisor: Prof. Pheng-Ann Heng & Prof. Chi-Wing Fu

08/2016 - Present

Expected graduation date: 07/2020

**South China University of Technology (SCUT)**

B.Eng. in Computer Science and Technology

GPA: 3.95/4.0 (**rank 1<sup>st</sup>** in All-English-Teaching Union Class)

★ Selected by SCUT for a special class for the most promising students

09/2012 - 07/2016

## RESEARCH INTERESTS

Computer vision, image processing, low-level vision, and deep learning.

## HONORS AND AWARDS

Hong Kong Ph.D. Fellowship (the **highest** scholarship for students studying in Hong Kong)

2016 - 2020

Excellent Teaching Assistant at CSE Department, CUHK

2018

Top 10 Outstanding Students at SCUT (**rank 1<sup>st</sup>**, the **highest** award for students at SCUT)

2016

Google Excellence Scholarship (one of 58 winners in **China**)

2015

Tencent Outstanding Scholarship (the **only** undergraduate winner at SCUT)

2015

National Scholarship (the **highest** national wide scholarship for undergraduate students in China)

2013

Gold Award of Pan-Pearl-River-Delta University IT Project Competition in China

2016

First Prize and Best Practical Award of University IT Project Competition in Guangdong Province

2016

First Prize of Adolescents Science & Technology Innovation Contest in Hebei Province

2011

## PUBLICATION HIGHLIGHTS

### Journal Papers

[J1] *Direction-Aware Spatial Context Features for Shadow Detection and Removal*

**Xiaowei Hu**, Chi-Wing Fu, Lei Zhu, Jing Qin, and Pheng-Ann Heng

IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**, IF: 17.730), 2019

[J2] *Saliency-Aware Texture Smoothing*

Lei Zhu\*, **Xiaowei Hu**\*, Chi-Wing Fu, Jing Qin, and Pheng-Ann Heng (\*joint 1<sup>st</sup> authors)

IEEE Transactions on Visualization and Computer Graphics (**TVCG**, IF: 3.780), 2019

[J3] *SINet: A Scale-Insensitive Convolutional Neural Network for Fast Vehicle Detection*

**Xiaowei Hu**, Xuemiao Xu, Yongjie Xiao, Hao Chen, Shengfeng He, Jing Qin, and Pheng-Ann Heng

IEEE Transactions on Intelligent Transportation Systems (**TITS**, IF: 5.744), 2019

[J4] *Deep Attentive Features for Prostate Segmentation in 3D Transrectal Ultrasound*

Yi Wang, Haoran Dou, **Xiaowei Hu**, Lei Zhu, Xin Yang, Ming Xu, et al.

IEEE Transactions on Medical Imaging (**TMI**, IF: 7.816), 2019

[J5] *Enhancing Augmented VR Interaction via Egocentric Scene Analysis*

Yang Tian, Chi-Wing Fu, Shengdong Zhao, Ruihui Li, Xiao Tang, **Xiaowei Hu**, and Pheng-Ann Heng

Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (**IMWUT**), 2019

### Conference Papers

[C1] *Mask-ShadowGAN: Learning to Remove Shadows from Unpaired Data*

**Xiaowei Hu**, Yitong Jiang, Chi-Wing Fu, and Pheng-Ann Heng

IEEE International Conference on Computer Vision (**ICCV**), 2019

- [C2] *Deep Multi-Model Fusion for Single-Image Dehazing*  
Zijun Deng, Lei Zhu, **Xiaowei Hu**, Chi-Wing Fu, Xuemiao Xu, Qing Zhang, Jing Qin, and Pheng-Ann Heng  
IEEE International Conference on Computer Vision (**ICCV**), 2019
- [C3] *Depth-Attentional Features for Single-Image Rain Removal*  
**Xiaowei Hu**, Chi-Wing Fu, Lei Zhu, and Pheng-Ann Heng  
IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2019
- [C4] *Probabilistic Multilayer Regularization Network for Unsupervised 3D Brain Image Registration*  
Lihao Liu, **Xiaowei Hu**, Lei Zhu, and Pheng-Ann Heng  
International Conference on Medical Image Computing and Computer Assisted Intervention (**MICCAI**), 2019
- [C5] *Direction-Aware Spatial Context Features for Shadow Detection*  
**Xiaowei Hu**, Lei Zhu, Chi-Wing Fu, Jing Qin, and Pheng-Ann Heng  
IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2018 (**Oral**, acceptance rate: **2.1%**)
- [C6] *Recurrently Aggregating Deep Features for Salient Object Detection*  
**Xiaowei Hu**, Lei Zhu, Jing Qin, Chi-Wing Fu, and Pheng-Ann Heng  
AAAI Conference on Artificial Intelligence (**AAAI**), 2018 (**Spotlight**)
- [C7] *R<sup>3</sup>Net: Recurrent Residual Refinement Network for Saliency Detection*  
Zijun Deng\*, **Xiaowei Hu**\*, Lei Zhu, Xuemiao Xu, Jing Qin, Guoqiang Han, and Pheng-Ann Heng (\*joint 1<sup>st</sup> authors)  
International Joint Conference on Artificial Intelligence (**IJCAI**), 2018 (**Oral**)
- [C8] *Bidirectional Feature Pyramid Network with Recurrent Attention Residual Modules for Shadow Detection*  
Lei Zhu, Zijun Deng, **Xiaowei Hu**, Chi-Wing Fu, Xuemiao Xu, Jing Qin, and Pheng-Ann Heng  
European Conference on Computer Vision (**ECCV**), 2018
- [C9] *Deep Attentional Features for Prostate Segmentation in Ultrasound*  
Yi Wang, Zijun Deng, **Xiaowei Hu**, Lei Zhu, Xin Yang, Xuemiao Xu, Pheng-Ann Heng, and Dong Ni  
International Conference on Medical Image Computing and Computer Assisted Intervention (**MICCAI**), 2018

## Papers Under Review

- [1] *SAC-Net: Spatial Attenuation Context for Salient Object Detection*  
**Xiaowei Hu**, Chi-Wing Fu, Lei Zhu, and Pheng-Ann Heng  
IEEE Transactions on Image Processing (**TIP**)
- [2]  *$\Psi$ -Net: Stacking Densely Convolutional LSTMs for Sub-cortical Brain Structure Segmentation*  
Lihao Liu\*, **Xiaowei Hu**\*, Lei Zhu, Chi-Wing Fu, Jing Qin, and Pheng-Ann Heng (\*joint 1<sup>st</sup> authors)  
IEEE Transactions on Medical Imaging (**TMI**)
- [3] *R<sup>3</sup>Net: Recurrent Residual Refinement Network for Saliency Detection*  
Zijun Deng, Lei Zhu, **Xiaowei Hu**, Xuemiao Xu, Jing Qin, Guoqiang Han, and Pheng-Ann Heng  
IEEE Transactions on Multimedia (**TMM**)
- [4] *Aggregating Attentional Dilated Features for Salient Object Detection*  
Lei Zhu, Jiaying Chen, **Xiaowei Hu**, Chi-Wing Fu, Xuemiao Xu, Jing Qin, and Pheng-Ann Heng  
IEEE Transactions on Circuits and Systems for Video Technology (**TCSVT**)

## WORK EXPERIENCE

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|--|-------------------|
| <b>Research Intern, The Chinese University of Hong Kong</b><br>Advisor: Prof. Pheng-Ann Heng<br>Worked on the deep learning techniques for vehicle detection   | 06/2015 - 08/2015 |
| <b>Research Intern, Hong Kong Baptist University</b><br>★ Selected by the outstanding undergraduate research opportunity program<br>Advisor: Prof. Yiu-Wing Leung & Doc. Hai Liu<br>Worked on the fault-tolerant algorithms for cognitive radio networks | 08/2014           |
| <b>Undergraduate Research Assistant, South China University of Technology</b><br>Advisor: Prof. Xuemiao Xu<br>Led a team and worked on the intelligent transportation system (authorized three Chinese invention patents)                                | 01/2013 - 07/2016 |

## PROFESSIONAL ACTIVITIES

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### Invited Talk

- ◇ AI Massive Open Online Course on “Direction-aware Spatial Context Features for Shadow Detection” July 2018

### Conference Reviews

- ◇ CVPR 2019, ICCV 2019, MICCAI 2019

### Journal Reviews

- ◇ Neurocomputing, The Visual Computer, IEEE Access

### Teaching Assistant at CUHK

- ◇ Advanced Topics in Computer Graphics and Visualization (Excellent Teaching Assistant) Spring 2018
- ◇ Digital Logic and Systems Fall 2016-2018
- ◇ Linear Algebra and Vector Calculus for Engineers Spring 2017