

# XIAOWEI HU

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## EDUCATION

**The Chinese University of Hong Kong (CUHK)**  
Ph.D. in Computer Science and Engineering

08/2016 - Present  
Expected graduation date: 07/2020

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

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

09/2012 - 07/2016

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

## RESEARCH INTERESTS

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

## HONORS AND AWARDS

Hong Kong Ph.D. Fellowship (the <b>highest</b> scholarship for students studying in Hong Kong)	2016 - 2020
Best Oral Presentation Aware of Hong Kong Computer Vision Workshop 2019	2019
Outstanding Reviewer of ICCV 2019 ( <b>3.6%</b> )	2019
Excellent Teaching Assistant at CSE Department, CUHK	2018
Top 10 Outstanding Students at SCUT ( <b>rank 1<sup>st</sup></b> , the <b>highest</b> award for students at SCUT)	2016
Google Excellence Scholarship (one of 58 winners in <b>China</b> )	2015
Tencent Outstanding Scholarship (the <b>only</b> undergraduate winner at SCUT)	2015
National Scholarship (the <b>highest</b> 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

**Summary: CCF A (9), TPAMI/CVPR/ICCV/ECCV (6)**

### 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**, CCF A), 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**, CCF A), 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**, CCF A), 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**, CCF A), 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**, CCF A), 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**, CCF A), 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**, CCF B), 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

## 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, CCF A), 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, CCF A), 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, CCF B), 2019
- [J4] *CANet: Cross-disease Attention Network for Joint Diabetic Retinopathy and Diabetic Macular Edema Grading*  
 Xiaomeng Li, **Xiaowei Hu**, Lequan Yu, Lei Zhu, Chi-Wing Fu, and Pheng-Ann Heng  
 IEEE Transactions on Medical Imaging (**TMI**, IF: 7.816, CCF B), 2019
- [J5] *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, CCF B), 2019
- [J6] *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**, IF: 4.046, CCF B), 2019
- [J7] *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 (**Ubicomp**, CCF A), 2019

## Papers Under Review

- [U1] *Anonymous*  
**Xiaowei Hu**, Tianyu Wang, Chi-Wing Fu, Yitong Jiang, Qiong Wang, and Pheng-Ann Heng  
 IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**, CCF A), 2020
- [U2] *Anonymous*  
 Tianyu Wang\*, **Xiaowei Hu**\*, Qiong Wang, Pheng-Ann Heng, and Chi-Wing Fu (\*joint 1<sup>st</sup> authors)  
 IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**, CCF A), 2020
- [U3] *Single-Image Real-Time Rain Removal Based on Depth-Guided Non-Local Features*  
**Xiaowei Hu**, Lei Zhu, Tianyu Wang, Chi-Wing Fu, and Pheng-Ann Heng  
 IEEE Transactions on Image Processing (**TIP**, IF: 6.790)
- [U4] *SAC-Net: Spatial Attenuation Context for Salient Object Detection*  
**Xiaowei Hu**, Chi-Wing Fu, Lei Zhu, and Pheng-Ann Heng  
 IEEE Transactions on Neural Networks and Learning Systems (**TNNLS**, IF: 11.683)
- [U5]  *$\Psi$ -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**, IF: 7.816)

- [U6] *Anonymous*  
Xiao Tang, **Xiaowei Hu**, Chi-Wing Fu, and Daniel Cohen-Or  
Eurographics, 2020
- [U7] *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**, IF: 5.452)
- [U8] *SALMNet: A Structure-Aware Lane Marking Detection Network*  
Xuemiao Xu, Tianfei Yu, **Xiaowei Hu**, Wing W. Y. Ng, Pheng-Ann Heng  
IEEE Transactions on Intelligent Transportation Systems (**TITS**, IF: 5.744)

## WORK EXPERIENCE

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

## PROFESSIONAL ACTIVITIES

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### Invited Talks

- ◇ Hong Kong Computer Vision Workshop on “Mask-ShadowGAN: Learning to Remove Shadows from Unpaired Data” (Best Oral Presentation Aware) October 2019
- ◇ AI Massive Open Online Course on “Direction-aware Spatial Context Features for Shadow Detection” July 2018

### Conference Services

- ◇ Programme Committee: AAAI 2020
- ◇ Reviewer: ECCV2020, CVPR 2020, ICCV 2019 (Outstanding Reviewer), CVPR 2019, MICCAI 2019

### Journal Reviews

- ◇ IEEE TCSVT, 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