

# XIAOWEI HU

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## EDUCATION

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<b>The Chinese University of Hong Kong (CUHK)</b> Ph.D. in Computer Science and Engineering Advisor: Prof. Pheng-Ann Heng & Prof. Chi-Wing Fu	08/2016 - Present
<b>South China University of Technology (SCUT)</b> B.Eng. in Computer Science and Technology GPA: 3.95/4.0 ( <b>rank 1<sup>st</sup></b> in All-English-Teaching Union Class) ★ Selected by SCUT for a special class for the most promising students	09/2012 - 07/2016

## RESEARCH INTERESTS

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

## HONORS AND AWARDS

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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	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

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

### 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] *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
- [J5] *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

- [J6] *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

## 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

## Papers Under Review

- [U1] *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)
- [U2] *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)
- [U3]  *$\Psi$ -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)
- [U4] *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)
- [U5] *Anonymous*  
 Xiao Tang, **Xiaowei Hu**, Chi-Wing Fu, and Daniel Cohen-Or  
 Eurographics, 2020
- [U6] *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)

- [U7] *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)
- [U8] *Dually Guided Non-Local Network for Breast Lesion Segmentation in Ultrasound*  
 Cheng Xue, Lei Zhu, Yunzhu Wu, **Xiaowei Hu**, Xiaomeng Li, Hai Zhang, and Pheng-Ann Heng  
 IEEE Transactions on Medical Imaging (**TMI**, IF: 7.816)

## 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: 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