Huikai **Wu**

PHD Student

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Summary

Deep Learning Researcher

Google Scholar

I'm currently a PhD candidate student at Institute of Automation, Chinese Academy of Sciences, affiliated with National Laboratory of Pattern Recognition and supervised by Professor Kaiqi Huang. I work on image processing, computer vision and deep learning. My research interests are pixel-level image understanding, automatic network architecture design and model acceleration.

Research Experience

Preferred Networks

Tokyo, Japan

International Intern

July. 2018 - Oct. 2018

- Website: `https://www.preferred-networks.jp/en/`
- Neural Architecture Search for Pixel-level Image Understanding

Palmwin Information Technology

Nanjing, China

Researcher

Aug. 2015 - Oct. 2015

- Website: `http://www.chatgame.me/en/`
- Write a survey on SLAM and AR.

NLPR (National Laboratory of Pattern Recognition)

Beijing, China

Researcher

Dec. 2014 - Apr. 2015

- Website: `http://www.nlpr.ia.ac.cn/nlpren/EN/volumn/home.shtml`
- Design and implement a car recognition system with 95% accuracy based on CNNs.

Education

CASIA (Institute of Automation, Chinese Academy of Sciences)

Beijing, China

PHD in Computer Vision and Deep Learning

Sep. 2015 - Present

Topic: Pixel-level image understanding GPA: **3.67**/4

NJU (Nanjing University)

Nanjing, China

B.S. in Software Engineering

Sep. 2011 - Jun. 2015

Thesis: Deep Active Learning GPA: **3.87**/4 Rank: **5**/257

Publications

FastFCN: Rethinking Dilated Convolution in the Backbone for Semantic Segmentation

Project Website

Huikai Wu, Junge Zhang, Kaiqi Huang, Kongming Liang, Yizhou Yu

arXiv preprint

Fast End-to-End Trainable Guided Filter

Project Website

Huikai Wu, Shuai Zheng, Junge Zhang, Kaiqi Huang

IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018

A2-RL: Aesthetics Aware Reinforcement Learning for Image Cropping

Project Website

Debang Li, **Huikai Wu**, Junge Zhang, Kaiqi Huang

IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018

MSC: A Dataset for Macro-Management in StarCraft II

Project Website

Huikai Wu, Junge Zhang, Kaiqi Huang

arXiv preprint arXiv:1710.03131

GP-GAN: Towards Realistic High-Resolution Image Blending *Project Website*

Huikai Wu, Shuai Zheng, Junge Zhang, Kaiqi Huang

arXiv preprint arXiv:1703.07195

Highlighted Research Experience

FastFCN: Rethinking Dilated Convolution in the Backbone for Semantic Segmentation

Project Website

We propose a novel joint upsampling module named Joint Pyramid Upsampling (JPU) to replace dilated convolutions in the backbone for semantic segmentation. With the proposed JPU, our method reduces the computation complexity by more than three times and achieves the state-of-the-art performance.

Fast End-to-End Trainable Guided Filter

Project Website

We present a deep learning block for joint upsampling, which aims at generating high-resolution output. With the proposed block, we achieve the state-of-the-art performance and run 10-100 times faster. The proposed block can be widely deployed in dense prediction tasks ranging from image processing to computer vision. The technique report is published in CVPR 2018.

A2-RL: Aesthetics Aware Reinforcement Learning for Image Cropping

Project Website

We formulate image cropping task as a sequential decision-making process and propose an algorithm based on deep reinforcement learning. The proposed algorithm achieves the state-of-the-art performance with much fewer candidate windows and much less time. The technique report is published in CVPR 2018.

GP-GAN: Towards Realistic High-Resolution Image Blending

Project Website

We propose GP-GAN for image blending task, which is a framework combining the strengths of gradient-based image editing and GANs. The proposed approach can deliver high-resolution, realistic images with fewer bleedings and unpleasant artifacts.

Honors & Awards

International

2017 **4th Place**, StarCraft Competition in AIIDE 2017 [Leaderboard].

Domestic

2016 **1st Place**, CCF Big Data Competition: Movie Box Prediction.

Academic Activities

Reviewers

2019 **ICCV 2019**, Reviewer

2019 **CVPR 2019**, Reviewer

Project

Face Swap *Jan. 2018*

Project Website

Swap face between two photos with Python 3, OpenCV and dlib.

MSC: A Dataset for Macro-Management in StarCraft II *Sep. 2017*

Project Website

A dataset for macro-management in StarCraft II based on PySC2.

Chainer implementation of Pix2Pix *Mar. 2017*

Project Website

Chainer implementation of *Image-to-Image Translation Using Conditional Adversarial Networks*

Chainer version of neural-style and fast-neural-style *Mar. 2017*

Project Website

Chainer implementation of *A Neural Algorithm of Artistic Style* and *Perceptual Losses for Real-Time Style Transfer and Super-Resolution*

Chainer implementation of realismCNN *Mar. 2017*

Project Website

Chainer implementation of realismCNN proposed in *Learning a Discriminative Model for the Perception of Realism in Composite Images*

References

Prof. Kaiqi Huang

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Prof. Junge Zhang

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Dr. ShuaiZheng

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