

WEITAO WAN

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🎓 EDUCATION

Ph.D. in Electronic Engineering (EE), **Tsinghua University**, Beijing, China 2016 - *present*

Image Recognition and High-speed Image Processing Lab. Advisor: Prof. Jiansheng Chen

B.S. in Electronic Engineering (EE), **Tsinghua University**, Beijing, China 2012 - 2016

Thesis: Image Captioning with Target Localization

💻 RESEARCH INTERESTS

Deep Learning, Object Detection, Face Recognition, Adversarial Learning.

👥 EXPERIENCE

Sohu Image-Text Matching Competition Mar. 2017 - Jun. 2017

Third prize out of 397 teams. Team members: Weitao Wan and Tianpeng Li.

- This task aims to find the top-10 most suitable illustrations for each news document. The training set contains 1 million image-text pairs and the test set contains 50,000 pieces of texts and 50,000 candidate images. We utilize a two-branch network for metric learning, with one branch extracting features of images and the other one extracting features of texts.

Sensetime Beijing, China Jun. 2016 - Sept. 2016

Summer Intern, Algorithm Researcher on Computer Vision Mentor: Dr. Yan Xia

Project: Car License Plate Detection in Traffic Scenes.

- We used the Faster R-CNN architecture to detect the car plates in scene images. In order to align the detected car plates from different angles of view, we did regression for the coordinates of the four corners of the car plates rather than two. Then a projective transformation was applied to align them.

Sensetime Beijing, China Jun. 2015 - Oct. 2015

Summer Intern, Algorithm Researcher on Computer Vision Mentor: Dr. Yan Xia

Project: Text Recognition on Car Plates, ID cards and Bank cards.

- We first trained a single-character recognition CNN model. Then we transformed it into Fully Convolutional Network by copying the weights of the fully connected layer into a convolutional layer with corresponding kernel size. We used the Connectionist Temporal Classification (CTC) to classify the text sequences.

📊 RESEARCH EXPERIENCE

A Novel Classification Loss Function Jun. 2017 - Nov. 2017

- This work aims to propose a new loss function which facilitates both the high classification performance and the accurate modeling of image feature distribution. We propose the Large-margin Gaussian Mixture (L-GM) loss based on the Gaussian Mixture assumption. Our proposal outperforms other loss functions on benchmarks including CIFAR, ImageNet and LFW. Besides, the established image feature distribution can be effectively utilized to discriminate adversarial examples.

Occlusion-Robust Face Recognition Sept. 2016 - Feb. 2017

- This work aims to improve the robustness of face recognition models towards facial occlusions. We propose a trainable module called MaskNet which can be included in existing CNN architectures to adaptively generate different masks for different occluded face images. Experiments on both synthetic and real-life datasets demonstrate the superiority of our architecture.

Image Captioning

Mar. 2017 - May 2017

- This work aims to improve the performance of image captioning models by combining the attention mechanism and image attributes prediction. Off-line evaluation on MS COCO datasets demonstrates that our method outperforms previous state-of-the-arts by a large margin.

PUBLICATIONS

Full list: https://scholar.google.com/citations?user=xIdF_oMAAAAJ&hl=zh-CN

Weitao Wan, Jiansheng Chen, Tianpeng Li, Yiqing Huang, Jingqi Tian, Cheng Yu, and Youze Xue. "Information Entropy Based Feature Pooling for Convolutional Neural Networks." *In Proceedings of the IEEE International Conference on Computer Vision (ICCV)*, 2019.

Tianpeng Li, **Weitao Wan**, Yiqing Huang, Jiansheng Chen, Chunhua Hu, and Yu Ma. "Improving Human Parsing by Extracting Global Information Using the Non-Local Operation." *In IEEE International Conference on Image Processing (ICIP)*, 2019

Yiqing Huang, Cong Li, Tianpeng Li, **Weitao Wan**, and Jiansheng Chen. "Image Captioning with Attribute Refinement." *In IEEE International Conference on Image Processing (ICIP)*, 2019.

Weitao Wan, Yuanyi Zhong, Tianpeng Li and Jiansheng Chen. "Rethinking Feature Distribution for Loss Functions in Image Classification." *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018. (spotlight)

Weitao Wan and Jiansheng Chen. "Occlusion Robust Face Recognition Based on Mask Learning." *IEEE International Conference on Image Processing (ICIP)*, 2017.

Cong Li, Jiansheng Chen, **Weitao Wan**, Tianpeng Li. "Combining Object-based Attention and Attributes for Image Captioning." *International Conference on Image and Graphics (ICIG)*, 2017.

SKILLS

- Programming: Python, Matlab, C++.
- Deep Learning Toolbox: Tensorflow, Caffe, Pytorch.
- Operating System: Ubuntu, Windows.
- Language: English - Fluent, Mandarin - Native speaker.

HONORS AND AWARDS

3 rd Prize, Award on Sohu Image-Text Matching Competition	Jun. 2017
National Encouragement Scholarship	Dec. 2014
Tsinghua Academic Scholarship	Dec. 2013
1 st Prize, National Physics Competition for Undergraduates	Dec. 2013

TEACHING EXPERIENCE

TA, Computer Programming Basics, Tsinghua University.	Mar. 2018 - Jul. 2018
TA, Data Structure and Algorithm, Tsinghua University.	Sept. 2017 - Jan. 2018

PERSONAL QUALIFICATIONS

- Diligent, creative, rigorous and independent.
- Good at expressing myself, both in speaking and writing.
- Teamwork.

MISCELLANEOUS

- GitHub: <https://github.com/WeitaoVan/>