Rui Qian

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EDUCATION

PEKING UNIVERSITY **Beijing, China**

Bachelor of Computer Science Sept. 2015 – Jul. 2019

- GPA: Overall: 3.73/4.00 (top 5%) Major: 3.86/4.00
- Honor-Track: Special Research Class of EECS (25 students selected from over 300)
- Coursework Highlights:
  - *Computer Vision* Related: Digital Image Processing(99)
  - *Computer System* Related:
    Operating System (96), Computer Organization (95), Computer Networks (Honor Track) (92)
  - *Math* Related: Advanced Mathematics (94.5), Algebraic Structure and Combinatorial Mathematics(95)

RESEARCH INTERESETS & HIGHLIGHTS

- Deep Generative Models (CVPR2018, Spotlight)
- Semantic Scene Parsing (AAAI2019)
- Object Detection

PUBLICATION

- **Rui Qian**, Robby T.Tan, Wenhan Yang, Jiajun Su, and Jiaying Liu. "Attentive Generative Adversarial Network for Raindrop Removal from A Single Image". Accepted by *IEEE Conference on Computer Vision and Pattern Recognition* (CVPR), Salt Lake City, USA, Jun. 2018. (**Spotlight)(Top 7%)**
- **Rui Qian,** Yunchao Wei, Honghui Shi, Jiachen Li, Jiaying Liu, and Thomas Huang. "Weakly Supervised Scene Parsing with Point-based Distance Metric Learning". Accepted by *AAAI Conference on Artificial Intelligence* (AAAI), Honolulu, Hawaii, Jan. 2019.

RESEARCH EXPERIENCE

Visual Computing Group, Microsoft Research Asia Sept. 2018 – Current

Research Intern | Mentor: Dr. Steve Lin(Principal Investigator), Dr. Jifeng Dai(Lead Researcher)

- **Project: Video Object Detection with Deformable ConvNets**
  - Applied deformable convolutional neural networks to the object detection in videos;
  - Constrained the offset of the kernels of deformable convolution units by using the deep feature flow between two closely related frames;
  - Currently improve the robustness of deformable convnets across frames and train to obtain the state-of-the-art performance on video object detection .

Image Formation & Processing Lab, University of Illinois Urbana-Champaign Jun. 2018 – Sept. 2018

Research Intern | Advisor: Prof. Thomas Huang(Member of National Academy of Engineering)

- **Project I: Weakly Supervised Semantic Scene Parsing**
  - Investigated for the first time on the challenging point-based weakly supervised regime: given only one annotated pixel per instance on the task of semantic scene parsing;
  - Proposed a point-based distance metric learning, to optimize the feature representations of same-category points to be similar and those from different categories to be distinct;

- The final method achieved 3/4 the performance of fully-supervised method on PASCAL-Context Dataset, but only used 0.006% annotated label pixels.

- **Project II: Efficient and Accurate 2D Object Detection**
  - Utilized an efficient multi-scale training strategy to sample the regions of interest from positive objects, background, confusing objects, and hard false positive detections at various scales;
  - Proposed a false positive reduction strategy by providing selected hard false positives in training;
  - Boosted the region proposal classification module without introducing any additional cost for inference;
  - The final method ranked **1st** at *Cyclist Detection Track*, **2nd** at *Pedestrian Detection Track* and 7th at *Car Detection Track* on the autonomous driving benchmark of KITTI.

Yale-NUS College, National University of Singapore Jul. 2017 – Sept. 2017

Research Intern | Advisor: Prof. Robby T.Tan

- **Project: Raindrop Removal from Images**
  - Offered the first public dataset in this community containing 1100 real image pairs of raindrop pictures and the corresponding ground-truth images in various outdoor conditions in Beijing and Singapore;
  - Based on generative adversarial network, proposed a novel injection of visual attention to both the generator and the discriminator;
  - The whole architecture shows great ability in raindrop removal in most cases and obtains state-of-the-art performance qualitatively and quantitatively.

Institute of Computer Science and Technology (ICST), Peking University. Feb. 2017 – Current

Research Intern | Advisor: Prof. Jiaying Liu

- **Project: Action Recognition in RGBD Videos**
  - Reimplemented classical works on skeleton-based RGBD video action recognition;
  - Explored various methods on encoding a video sequence into single image for classification;
  - Led the capturing of a RGBD action recognition and detection database of 4,056 videos with 3 camera views, 26 themes and 40 subjects. The procedure of annotation is still ongoing.

SELECTED AWARDS

- Scholarship of Suzhou Industry Park, 2018 (1 in 50)
- Outstanding Research Award, Peking University, 2017
- Scholarship of Phicomm Corp, 2017
- Scholarship of Founder Corp, 2016 (2 in 40)
- Second Prize of ACM-ICPC PKU Campus 2017 (rank 5%)

OTHER INFORMATION

Languages:

- English (fluent):
  - TOEFL: 106 (Reading 28, Listening 27, Speaking 23, Writing 28)
  - GRE: Verbal 153 (61%) Quantitative 170 (97%) AW 4.0
- Chinese (native)

Programming: Python, C&C++, Matlab, X86 Assembly

Deep learning frameworks: PyTorch, MXNet, Keras