Rui Qian

Room 129, Building 31, Peking University, Beijing, 100871, P.R. China
Tel: (+86) 188-1131-8179 Email: qianrui@pku.edu.cn

EDUCATION

PEKING UNIVERSITY **Beijing, China**

Bachelor of Computer Science Sept. 2015 – Jul. 2019

- GPA: Overall: 3.74/4.00 Major: 3.87/4.00
- Ranking: 10/207 (5%)
- Honor Track: Special Research Class of EECS (25 students selected from over 300)
- Coursework Highlights:
  - *Computer Vision* Related: Digital Image Processing (99), Directed Group Study (CV Track) (98)
  - *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 (State of the art on KITTI Benchmark)

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% Papers**)
- **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. (**Accept Rate: 16.2%**)

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: Multi-task Learning with Dynamic Feature Routing**
  - Implemented a multi-task learning network with shared base feature extractor and task-specific heads
  - Designed a dynamic feature routing network with consideration on the variance of shared base feature and task specific features
  - Explored the relationship between classification, segmentation, surface normal and depth estimation and improved the performances of each task by different stage and rate of feature sharing.

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

Research Intern | Advisor: Prof. Thomas Huang (Member of U.S. 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*, **3rd** at *Pedestrian Detection Track* and 10th 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 1,100 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
    - Whole architecture showed great ability in raindrop removal in most cases and obtained 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 three camera views, 26 themes and 40 subjects.

SELECTED AWARDS

- SenseTime Scholarship, 2018 (30 in China)
- Scholarship of Suzhou Industry Park, 2018 (1/50)
- Outstanding Research Award, Peking University, 2017
- Scholarship of Phicomm Corp, 2017
- Scholarship of Founder Corp, 2016 (2/40)
- Second Prize of ACM-ICPC PKU Campus 2017 (top 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

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

Deep-learning frameworks: PyTorch, MXNet, Keras