Chong Zhou

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Research Interests

I am broadly interested in computer vision and related problems in machine learning. My research experience is focused on instance segmentation, object detection, and pedestrian detection. Currently, I'm particularly interested in self-supervised learning.

Education

University of California Davis, CA, USA

M.S., Computer Science, 2018 - 2020

GPA: 4.00/4.00

- Advisor: Prof. Yong Jae Lee

Nankai University, Tianjin, China

B.E., Software Engineering, 2014 - 2018

GPA: Overall 3.66/4.00; Major 3.72/4.00

- Advisor: Prof. Ming-ming Cheng

Publications

[1] Daniel Bolya, **Chong Zhou**, Fanyi Xiao, and Yong Jae Lee. YOLACT: Real-time instance segmentation. In *The IEEE International Conference on Computer Vision (**ICCV**)*, October 2019. (**Oral presentation**).

[2] Daniel Bolya*, **Chong Zhou***, Fanyi Xiao, and Yong Jae Lee (* equal contribution). YOLACT++: Better real-time instance segmentation. *IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**)*, 2020.

[3] Penghao Zhou, **Chong Zhou**, Pai Peng, Junlong Du, Xing Sun, Xiaowei Guo, and Feiyue Huang. NON-NMS: Improving pedestrian detection by nearby objects hallucination. In *Proceedings of the 28th ACM International Conference on Multimedia (**ACM Multimedia**)*, 2020.

[4] **Chong Zhou**, Xun Liu, Penghao Zhou, Pai Peng, Ke Yan, Xing Sun, Yuting Gao, and Xiaowei Guo. Fast and Fusion: Real-time pedestrian detector boosted by body-head fusion. In submission, 2020.

Awards

- Most Innovative Award, COCO Object Detection Challenge, 2019
- Graduate Research Assistantship, UC Davis, 2019
- National University Student Innovation Program Grant ($3100), 2016
- 'Gongneng' Scholarship (15%), NKU, 2015 and 2016

Experience

University of California Davis, CA, USA

Graduate Student Researcher **Dec 2018 - Mar 2020**

- Propose a simple, fully-convolutional model for *real-time* instance segmentation that achieves 29.8 mAP on MS COCO at 33 fps evaluated on a single Titan XP, which is significantly faster than any previous competitive approach. [ICCV 2019]
- Boost the performance of our real-time instance segmenter to 34.1 mAP on MS COCO while keeping it running at 33 fps. [TPAMI 2020]

Tencent Youtu Lab, Shanghai, China

Research Intern **Apr 2020 - Present**

- Scenes in the pedestrian detection task are more crowded than those in generic object detection. However, traditional NMS does not consider pedestrian density. Thus, we improve the NMS algorithm by making it aware of the nearby pedestrians, which significantly boosts the detection performance. [ACM MM 2020]
- Two-stage pedestrian detectors yield stronger performance but their speed is limited by the propose-then-refine pipeline; Current single-stage detectors are significantly faster yet haven't addressed the occlusion problem, which leads to poor performance. Thus, we propose FastNFusion, which enjoys the merit of anchor-free single-stage detectors and mitigates the occlusion problem. [In submission]

SKILLS

- Programming: Python, C/C++, Java
- Misc: PyTorch, LINUX, LaTeX