YIHONG CHEN

(+86)13121057522 ⋄ chenyihong@pku.edu.cn ⋄ [Homepage]

RESEARCH INTEREST

My research interest is on computer vision and machine learning problems in general. I am currently working on basic computer vision tasks like object detection and problems that have great application in real world scenarios. I am also fond of things that aim at creating.

EDUCATION

Peking University, Beijing, China *August 2018 - Present*
Beijing Institute of Big Data Research, Academy for Advanced Interdisciplinary Studies
Master student (supervised by Liwei Wang) in Data Science

Cambridge University, United Kingdom *August 2016*
Visiting student

Xiamen University, Xiamen, China *August 2014 - June 2018*
School of Mathematical Sciences
Bachelor of Science in Mathematics   Overall (Major) GPA: 3.78 (3.95)/4.0
Selected Cources (4.0/4.0): Advanced Algebra, Abstract Algebra, Probability Theory, Ordinary Differential Equations, Partial Differential Equations, Complex Analysis, Real Analysis, Stochastic Process, Time Series, Number Theory...

PUBLICATION

1. **Yihong Chen**, Zheng Zhang, Yue Cao, Liwei Wang, Stephen Lin and Han Hu, *"RepPoints V2: Verification Meets Regression for Object Detection"*
   Accepted by Conference on Neural Information Processing Systems (NeurIPS)   2020

2. **Yihong Chen**, Yue Cao, Han Hu and Liwei Wang, *"Memory Enhanced Global-Local Aggregation for Video Object Detection"*
   Accepted by IEEE Conference on Computer Vision and Pattern Recognition (CVPR)   2020

EXPERIENCE

Microsoft Research Asia, China *Dec. 2019 - Present*
Full-time research intern
I am fortunate to work with and learned a lot from Han Hu, Yue Cao, Zheng Zhang and Steve Lin. My research topics are focused on basic computer vision tasks like object detection, instance segmentation and their extension in video understanding.

PROJECTS

Object Detection without NMS (ongoing).

- Non-Maximum Suppression (NMS) is an indispensable component in current anchor-based (or anchor-free) detection pipeline. However, due to the overlapping issue existed in natural images, NMS with a fixed threshold could never be optimal.

- Recently, the introduction of DETR opens a new direction to remove the NMS step in object detection. However, DETR could hardly detect small objects and is trapped by the problem of slow convergence.

- Could we get inspiration from DETR and incorporate its merits into current object detection pipeline? We are now investigating this direction of possibility :)

Investigation on Verification and Regression in Object Detection and Beyond.

- Make a thorough study and reveal the essential difference between verification-based methods (*e.g.* CornerNet) and regression-based methods (*e.g.* FCOS) in the field of object detection.

- Based on what we discovered, we proposed an efficient method to take the merits of verification and regression to build a much more stronger object detector and achieve SOTA performance in the COCO dataset.

- Our method could be easily transferred to instance segmentation and beyond to elevate the performance, demonstrating its generality.

- This work is summarized in a paper and accepted by NeurIPS 2020.

An Efficient Feature Aggregation Method for Video Object Detection.

- There are two sources of information for people to recognize objects in videos, namely global semantic information and local localization information. We find current methods for video object detection could only utilize information from single source, which limits their efficacy.

- To escape from this limitation, we proposed a module to efficiently aggregate information both globally and locally. Moreover, our method could access information from a much larger scope than any previous methods. Our method also do not introduce much computation overhead.

- These merits lead to the superior performance of our proposed method. We achieve currently the best performance in the challenging ImageNet VID dataset.

- We also open-source world's first library for video object detection (200+ stars), which containing several representative methods in this field. We hope our efforts could help the development of this important field. :)

- This work is summarized in a paper and accepted by CVPR 2020.

HONORS & REWARDS

- National Scholarship, Ministry of Education of China, 2020

- summa cum laude, Xiamen University, 2018

- Silver Medal, ACM-ICPC Asia Regional, 2017

- National Scholarship, Ministry of Education of China, 2016

- The Elite Undergraduate Training Program of Math, Ministry of Education of China, 2015-2018

- Bronze Medal, National Olympiad in Informatics (NOI), 2013

MISC

- Conference Reviewer: CVPR 2021