Peize Sun 孙培泽

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Education

Xi'an Jiaotong University, Xi'an, Shaanxi, China 09/2017 – 06/2020 (Expected)
M.E. in Electrical Engneering

Xi'an Jiaotong University, Xi'an, Shaanxi, China 09/2013 – 06/2017
B.E. in Electrical Engneering (**Summa Cum Laude**)
Ranking: 1/64 (5/350)

Research Experience

UnifiedNet: Beyond Anchor-based and Anchor-free Detector 05/2019-now
Detection team, Megvii Co. Ltd. (Face++)

Effective Positive Learning for Single-Stage Pedestrian Detection 12/2018-03/2019
Detection team, Megvii Co. Ltd. (Face++)

Amodal Instance Segmentation via Implicit Maximum Likelihood Estimation 08/2018-11/2019
BAIR, UC Berkeley

Project Experience

Intelligence Video Surveillance System of Power Transmission Lines 04/2017 - 08/2017
Power Equipment Lab, XJTU

Cloud Platform for Assisting Switchgears Status diagnosis 10/2016 - 04/2017
Power Equipment Lab, XJTU

Awards

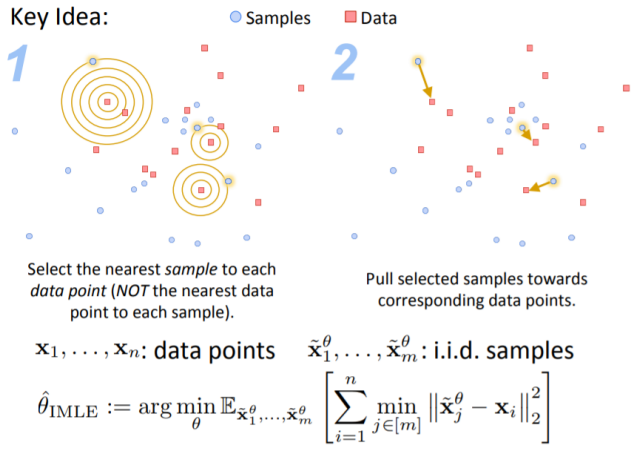
Chiang Chen Enterprise Scholarship 2018&2017
1st Prize (Meritorious Winner), Interdisciplinary Contest in Modeling of America 2016
2nd Prize, National Contest on Energy Saving & Emission Reduction 2016
2nd Prize, Shaanxi "TI Cup" Electronic Design Contest2016 2016
National Scholarship 2016
National Endeavor Scholarship 2015&2014

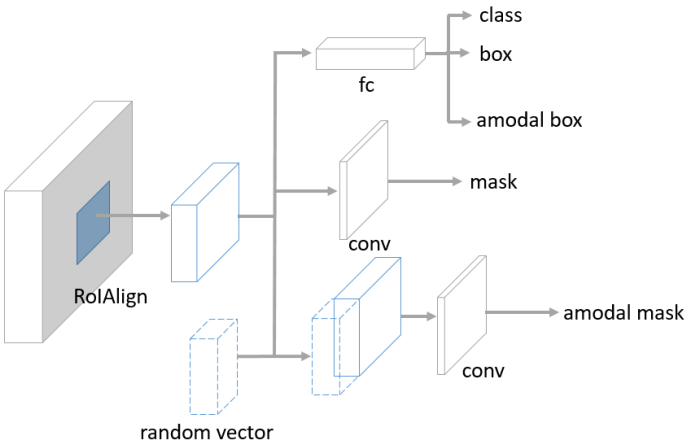
Technical Skills

Programming Language: Python, Matlab, C++, HTML, SQL, PHP
Tools/Library/Software: Caffe, Caffe2, PyTorch, Altium Design, COMSOL
Environment: Linux, Windows

Topic: Amodal Instance Segmentation via Conditional Implicit Maximum Likelihood Estimation
Affiliation: UC Berkeley
Collaborator: Ke Li, Jitendra Malik

Method:





(a) Illustration of Implicit Maximum Likelihood Estimation[3] (b) Illustration of Amodal Mask R-CNN

Demo:

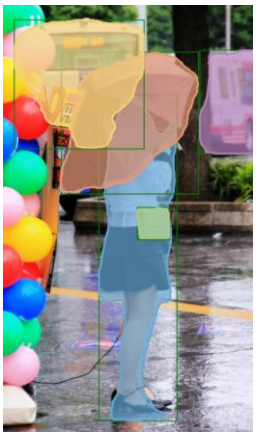

(a)Annotation


(b) Amodal annotation[1]


(c)Mask R-CNN[2]


(d) Amodal Mask R-CNN

Future Direction: More realistic and Bigger dataset



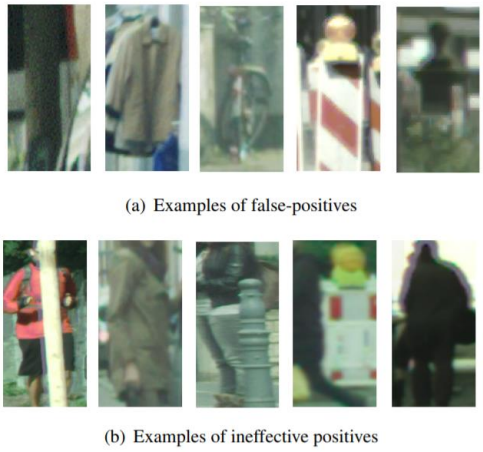
Status: Detached

Reference:

[1] Yan Zhu, Yuandong Tian, Dimitris Mexatas, and Piotr Dollár. Semantic Amodal Segmentation. CVPR, 2017.
[2] Kaiming He, Georgia Gkioxari, Piotr Dollár, and Ross Girshick. Mask R-CNN. ICCV, 2017.
[3] Ke Li and Jitendra Malik. Implicit Maximum Likelihood Estimation. arXiv:1809.09087, 2018.

Topic: Effective Positive Learning for Single-Stage Pedestrian Detection
Affiliation: Megvii(Face++)
Collaborator: Li Hu, Hongkai Zhang, Feng Xiong, Boxun Li, Gang Yu

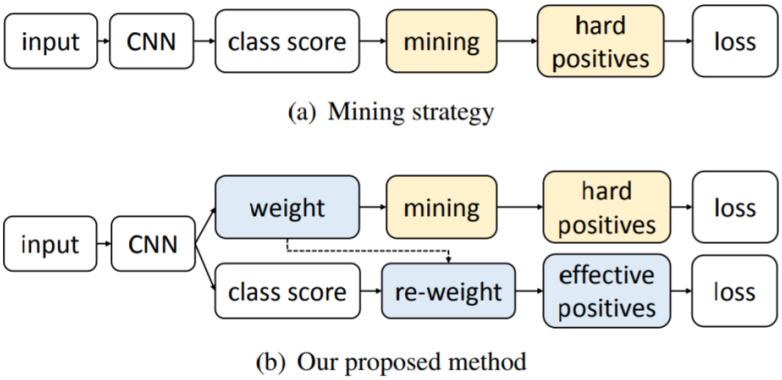
Method:



(a) Examples of false-positives

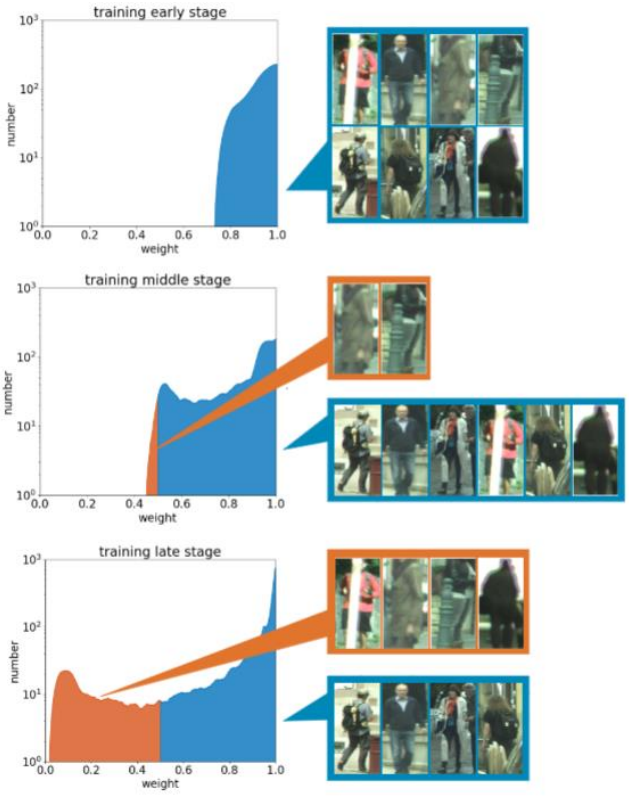
(b) Examples of ineffective positives

(a) Illustration of our motivation[1]

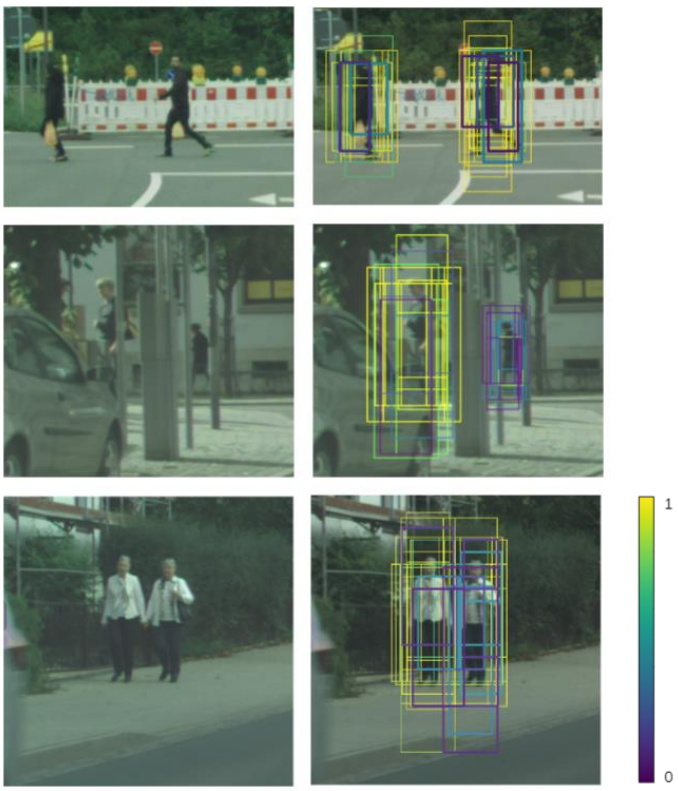


(b) Illustration of our proposed method

Experiment:



(a) Weight of positive examples at different training stages



(b) Weight of positve example from a converged model[2]

Status: Submitted to ICCV 2019

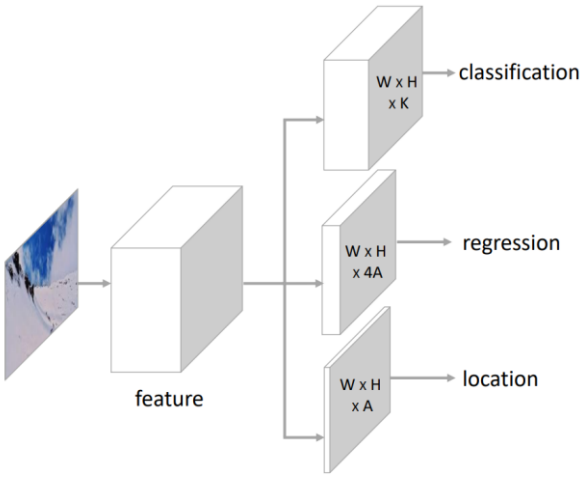
Reference:

[1] Shanshan Zhang and Rodrigo Benenson and Bernt Schiele. CityPersons: A Diverse Dataset for Pedestrian Detection. CVPR, 2017

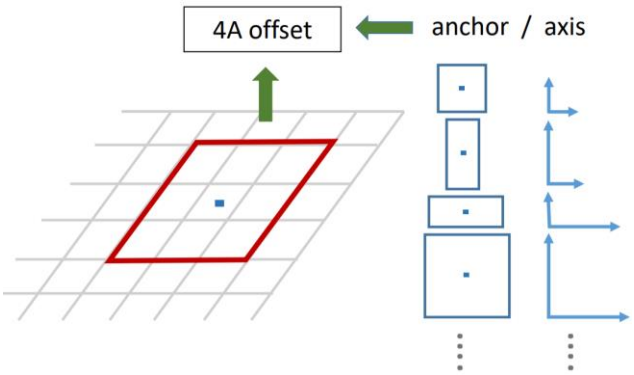
[2] Tsung-Yi Lin, Priya Goyal, Ross Girshick, Kaiming He, Piotr Dollár. Focal Loss for Dense Object Detection. ICCV, 2017.

Topic: UnifiedNet: Beyond Anchor-based[1] and Anchor-free[2] Detector
Affiliation: Megvii(Face++)
Collaborator: Zeming Li, Boxun Li, Gang Yu

Method:



(a) Illustration of network architecture



(b) Illustration of regression branch

Experiment:

Method	Classification			Regression			Location		AP	AP_{50}	AP_{75}
	anchor	point	box	anchor	point	axis	point	box			
RetinaNet	✓			✓					34.0	52.5	36.5
ConRetinaNet			✓	✓							
Foveabox		✓			✓				33.7	52.8	35.7
FCOS		✓			✓		✓		34.7	53.2	37.0
UnifiedNet		✓			✓			✓	35.1	53.3	37.7
		✓				✓		✓	35.5	53.0	37.9
		✓		✓				✓			

Status: Continuing

Reference:

[1] Tsung-Yi Lin, Priya Goyal, Ross Girshick, Kaiming He, Piotr Dollár. Focal Loss for Dense Object Detection. ICCV, 2017.

[2] Zhi Tian, Chunhua Shen, Hao Chen and Tong He. FCOS: Fully Convolutional One-Stage Object Detection. arXiv:1904.01355, 2019.