Problem Set 4

Jingbo Cheng*
Department of CS
Peking University
chengw@stu.pku.edu.cn

Abstract

Use the modern object detection library MMDetection model to detect and classify the objects in the images.

*student ID:'' 2100013016

1 mAP with different iou threshold

```
+--------+-----+------+--------+-------+
| class  | gts | dets | recall | ap    |
+--------+-----+------+--------+-------+
| apple  | 35  | 65   | 1.000  | 0.953 |
| banana | 40  | 211  | 1.000  | 0.833 |
| orange | 42  | 98   | 0.976  | 0.954 |
+--------+-----+------+--------+-------+
| mAP    |     |      |        | 0.913 |
+--------+-----+------+--------+-------+
OrderedDict([('AP50', 0.913), ('mAP', 0.9133558869361877)])
```

```
+--------+-----+------+--------+-------+
| class  | gts | dets | recall | ap    |
+--------+-----+------+--------+-------+
| apple  | 35  | 45   | 0.971  | 0.928 |
| banana | 40  | 46   | 0.675  | 0.653 |
| orange | 42  | 50   | 0.929  | 0.923 |
+--------+-----+------+--------+-------+
| mAP    |     |      |        | 0.835 |
+--------+-----+------+--------+-------+
OrderedDict([('AP50', 0.835), ('mAP', 0.8347437977790833)])
```

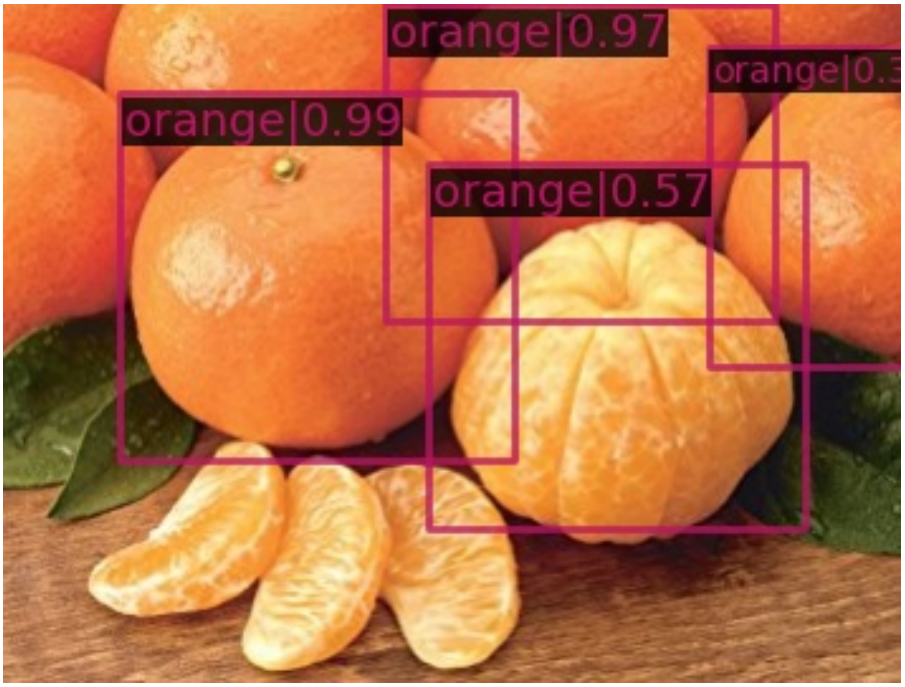
```
---------------iou_thr: 0.5---------------

+--------+-----+------+--------+-------+
| class  | gts | dets | recall | ap    |
+--------+-----+------+--------+-------+
| apple  | 35  | 48   | 1.000  | 0.955 |
| banana | 40  | 72   | 0.900  | 0.867 |
| orange | 42  | 58   | 0.976  | 0.967 |
+--------+-----+------+--------+-------+
| mAP    |     |      |        | 0.930 |
+--------+-----+------+--------+-------+
OrderedDict([('AP50', 0.93), ('mAP', 0.9297634959220886)])
```

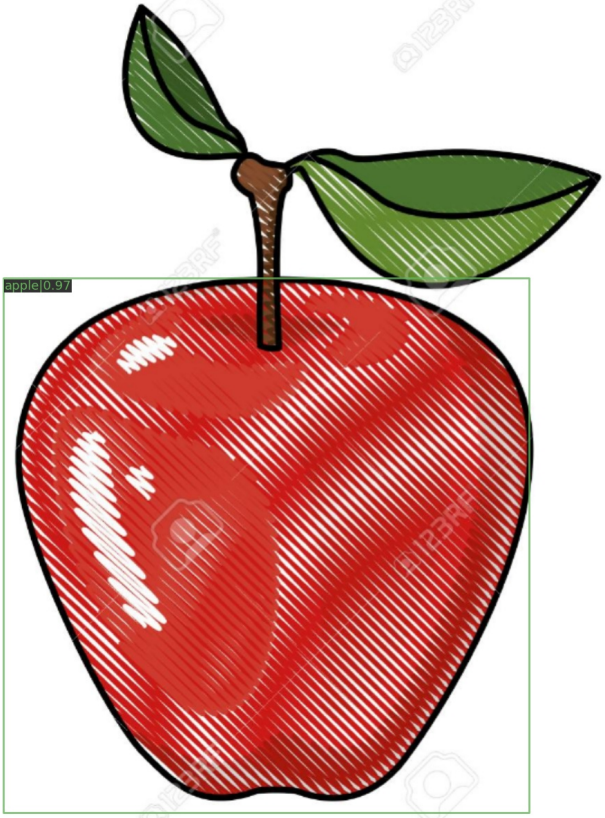
2 The result picture

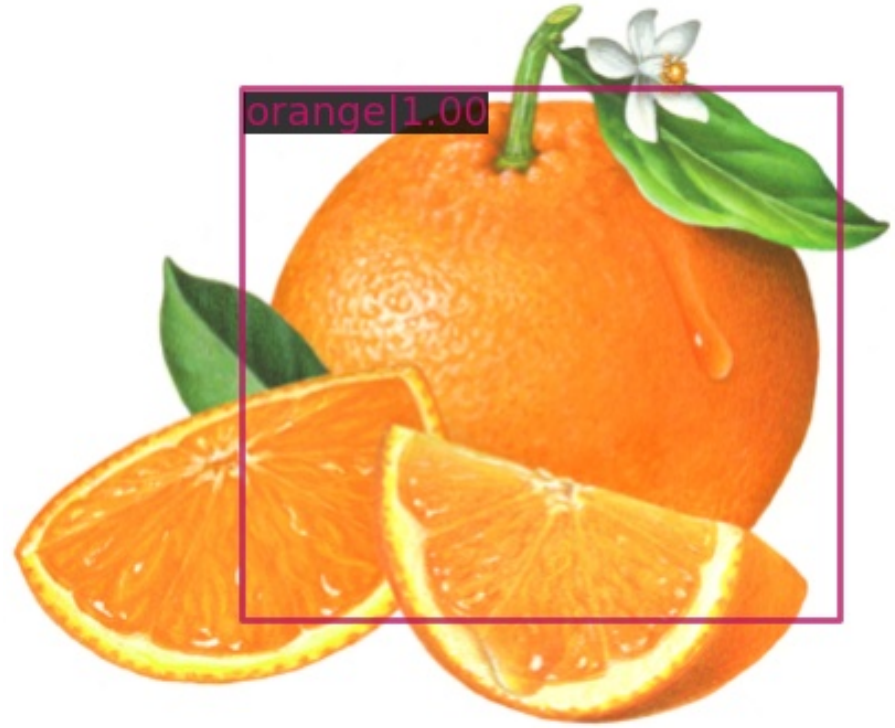
See the bottom of this article for details

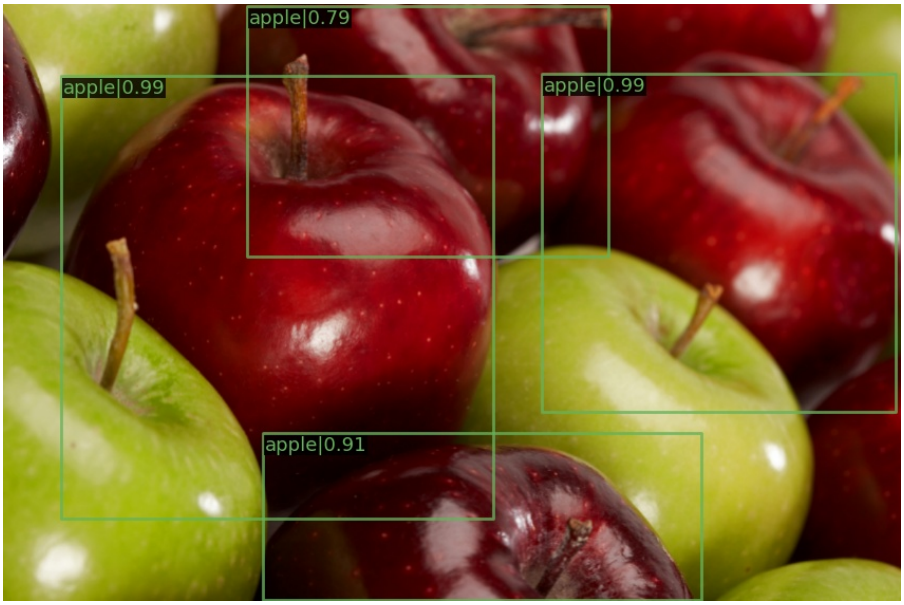
3 Improvement process

I use the MMDetection pretrained model Faster R-CNN, and define my own dataset class. It behave well. Then I split the train dataset to train and validation. The acc increased. By this way, I tested many model(using the pretrained model), And finally I got the best model.


orange|0.97
orange|0.99
orange|0.57


apple|0.97


orange|1.00


apple|0.79
apple|0.99
apple|0.99
apple|0.91

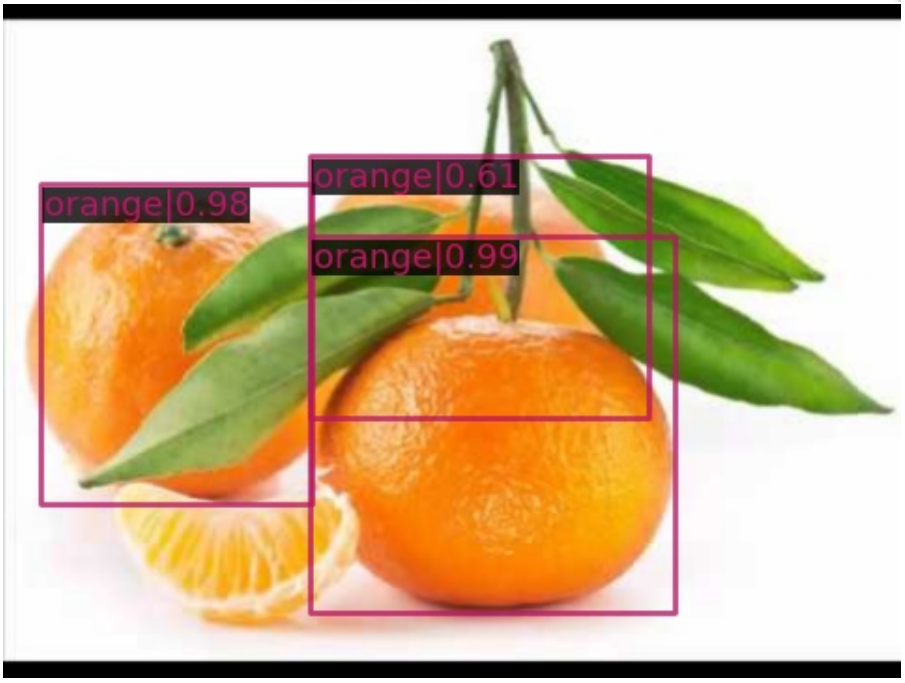

apple|0.98

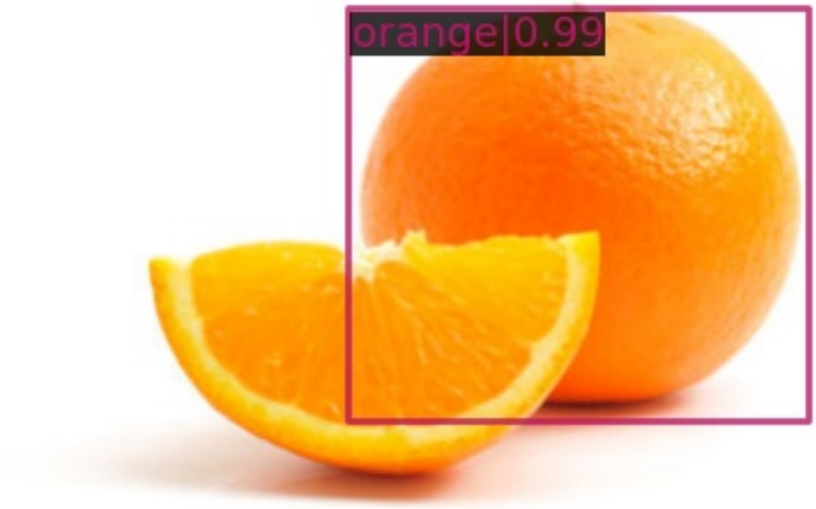

orange|0.99
orange|0.99


banana|0.98
banana|0.62


banana|0.99


banana|0.98


orange|0.61
orange|0.98
orange|0.99

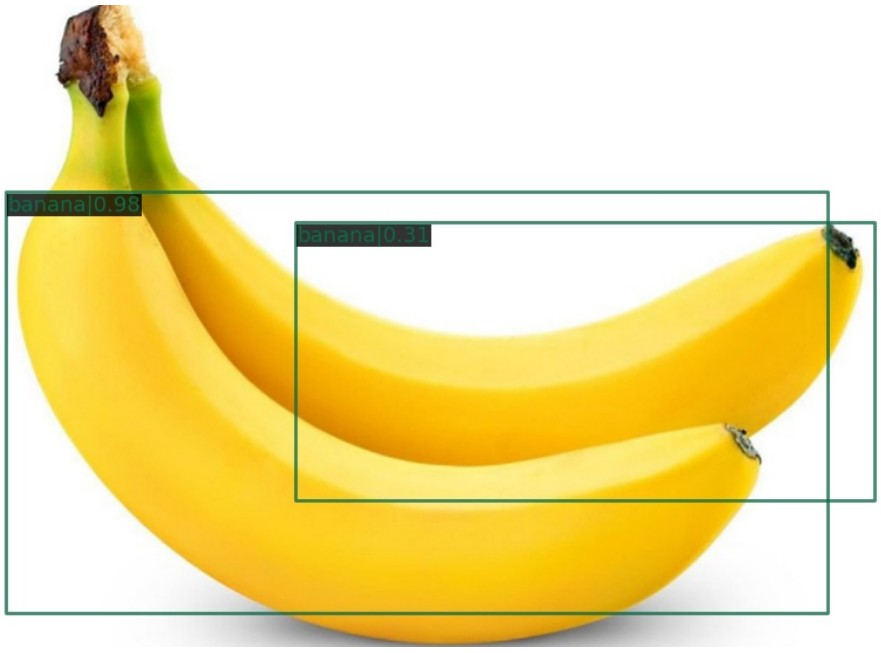

orange|0.99

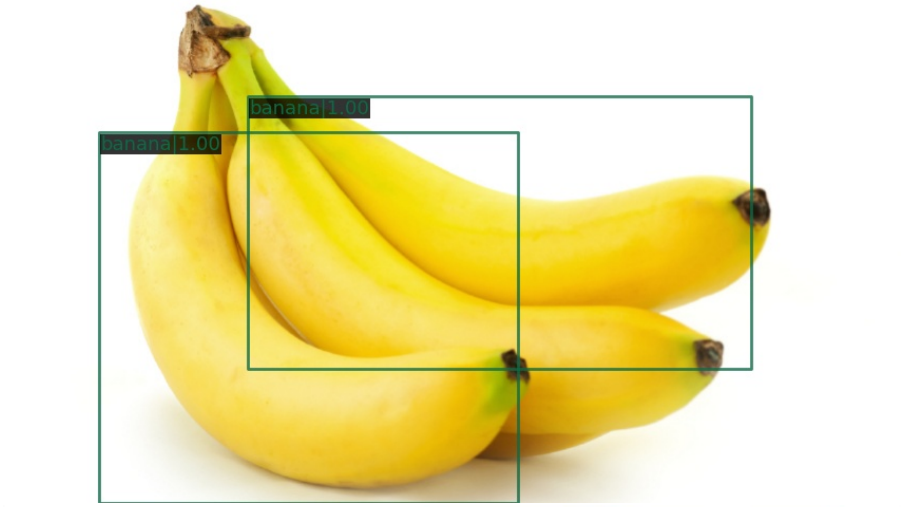

banana|0.99

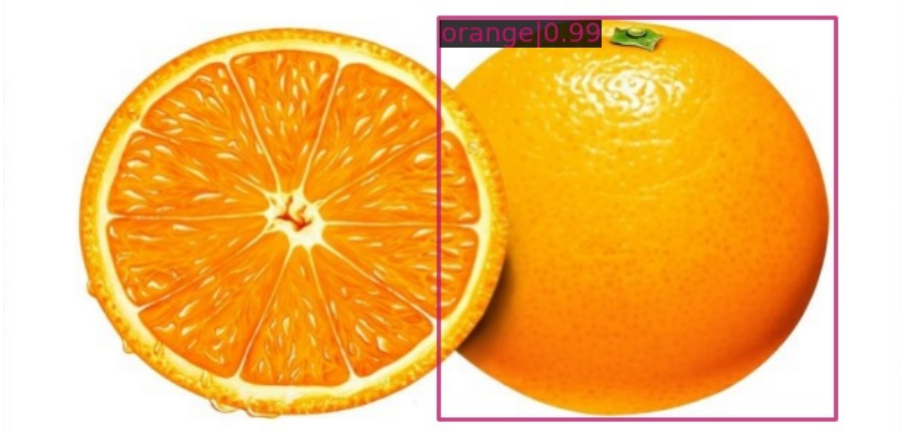

banana|0.98
Download from
Dreamstime.com
This watermarked comp image is for previewing purposes only.
ID 31151806
Christoph Weihs | Dreamstime.com

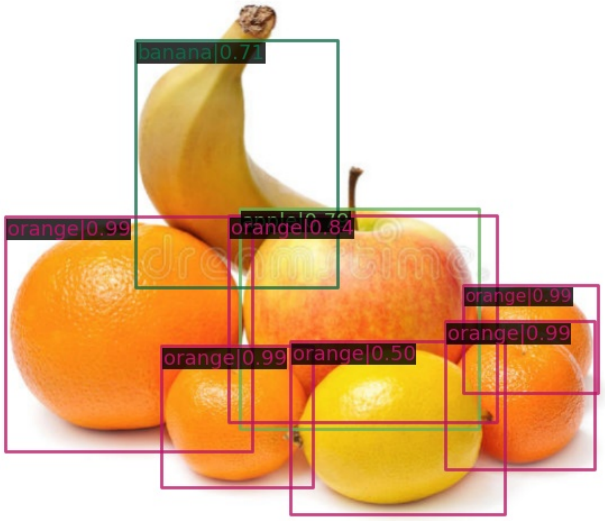

apple|0.99
apple|0.99
apple|1.00

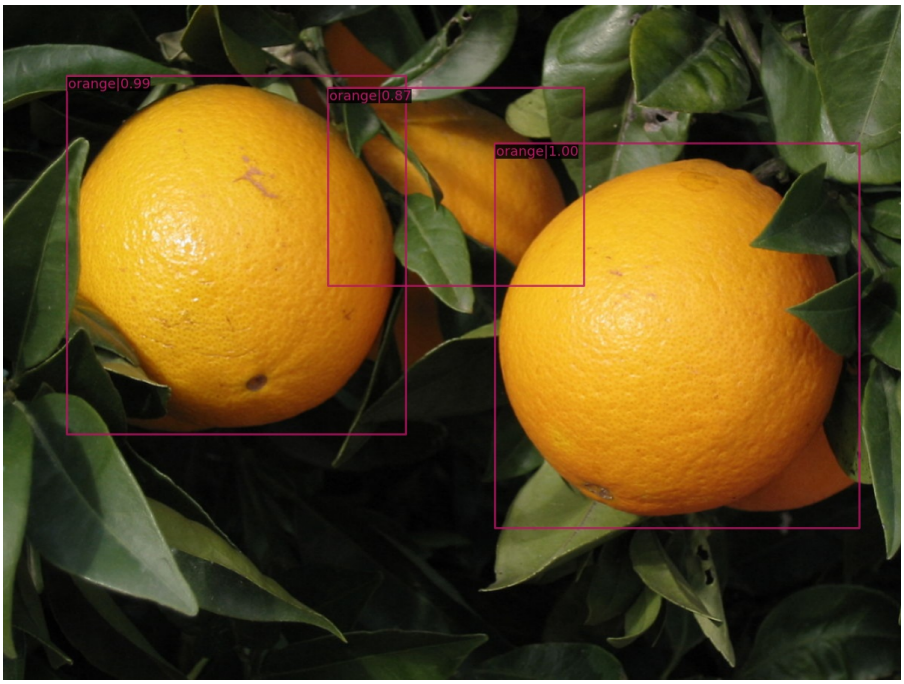

banana|0.99
banana|0.99


banana|0.98
banana|0.31

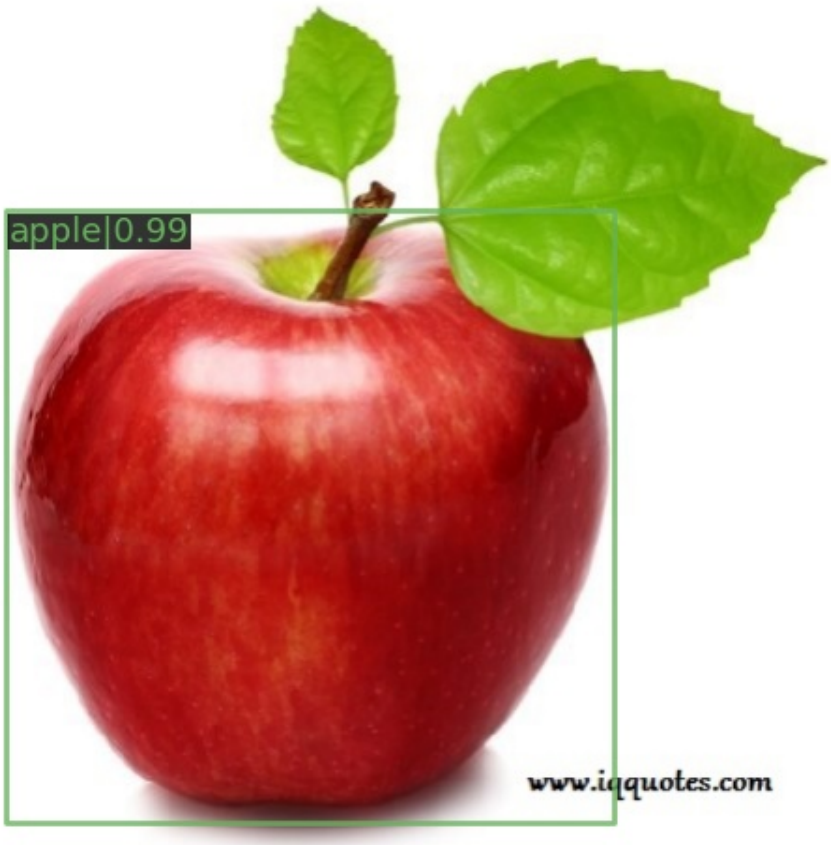

banana|1.00
banana|1.00


orange|0.99


banana|0.71
orange|0.99
orange|0.84
orange|0.99
orange|0.99
orange|0.99
orange|0.50


orange|0.99
orange|0.87
orange|1.00

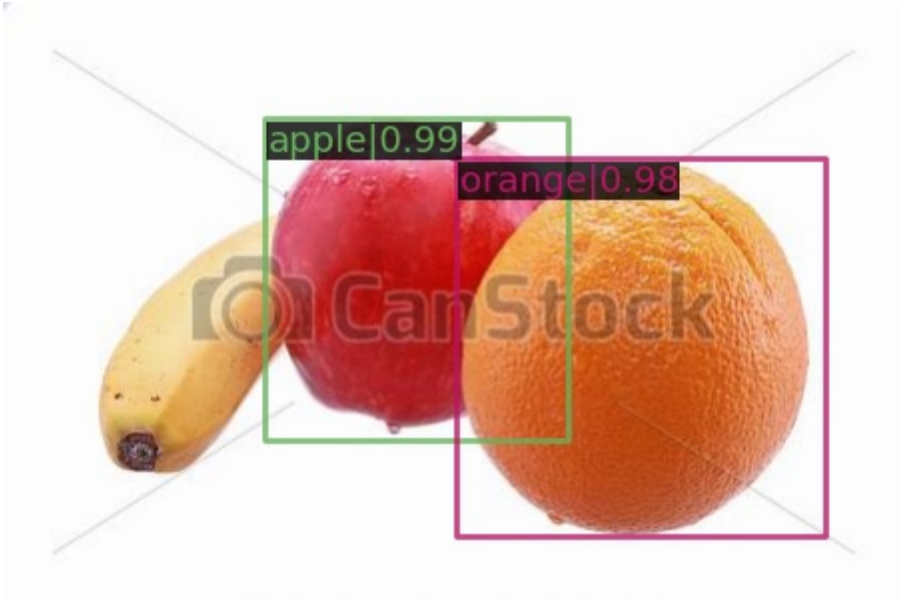

apple|0.99


apple|0.99
www.iqquotes.com


apple|0.99


apple|0.99
RED DELICIOUS
4015
Yummy™
NEW ZEALAND


apple|0.99



© Can Stock Photo - csp6486577


apple|0.98
banana|0.38
banana|0.56
apple|0.95
apple|0.54
banana|0.97