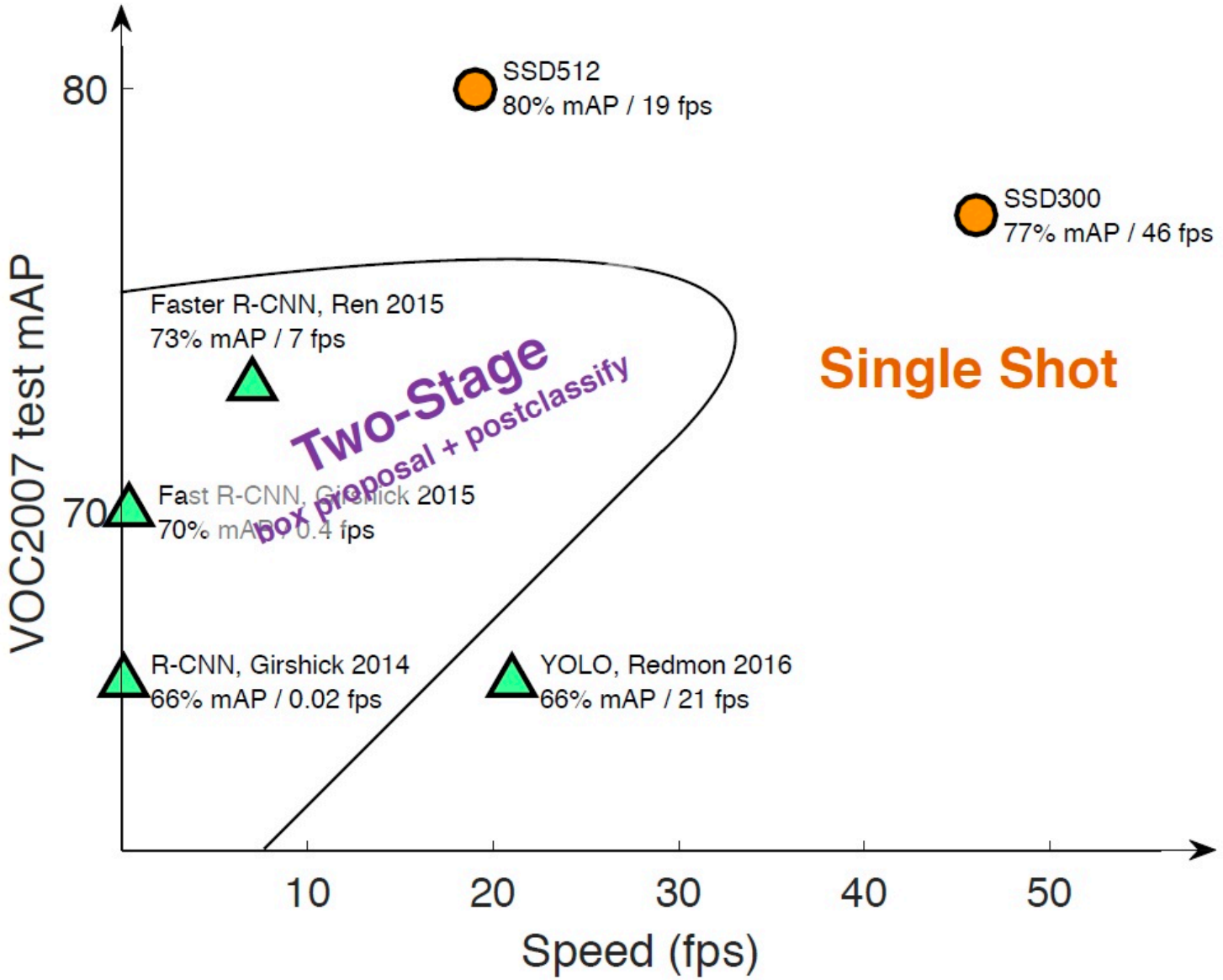
NMS代码讲解与SSD方法

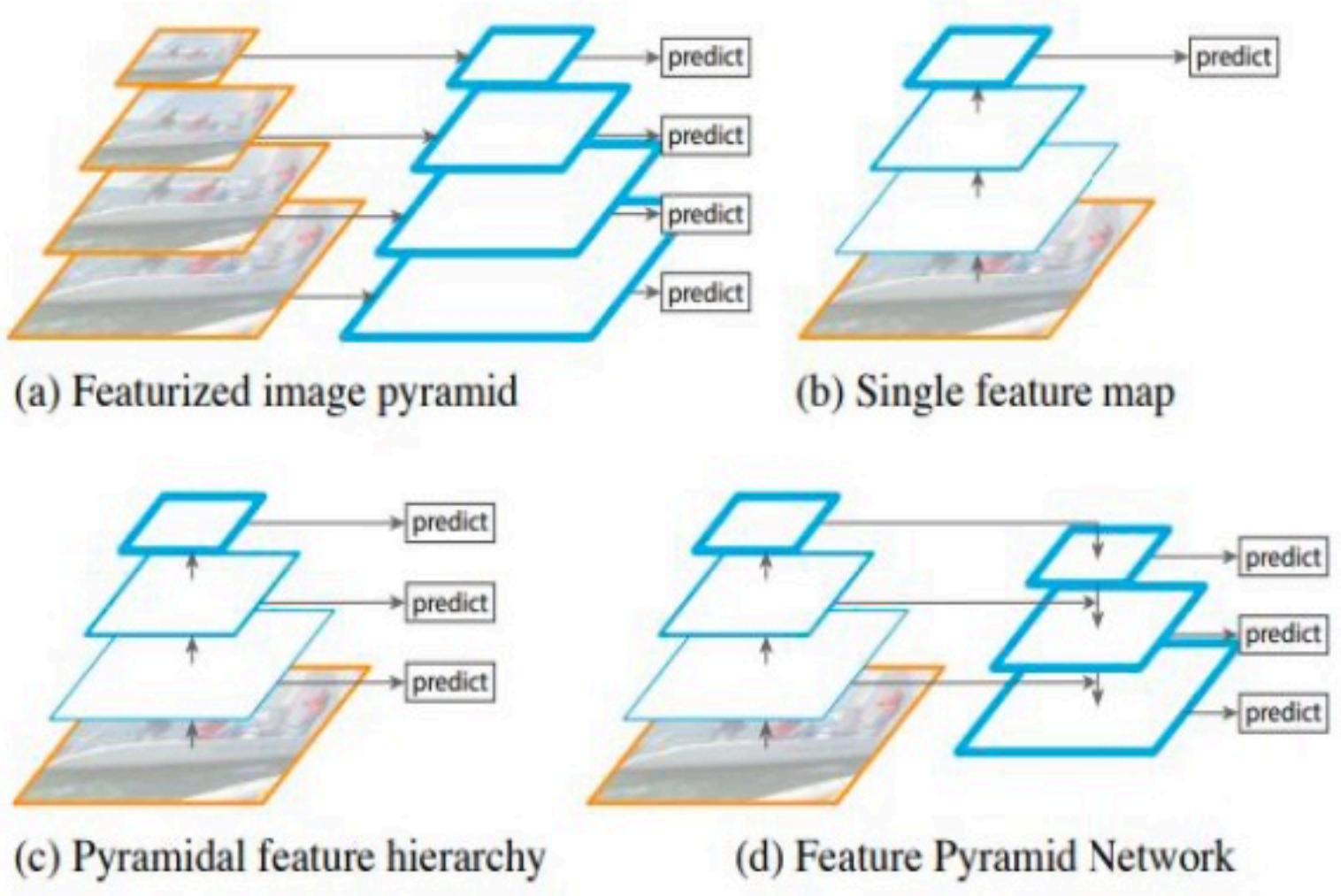


SSD （**Single Shot MultiBox Detector**）

a. Multi-scale feature maps for detection

b. Default boxes and aspect ratios

c. Convolutional predictors for detection



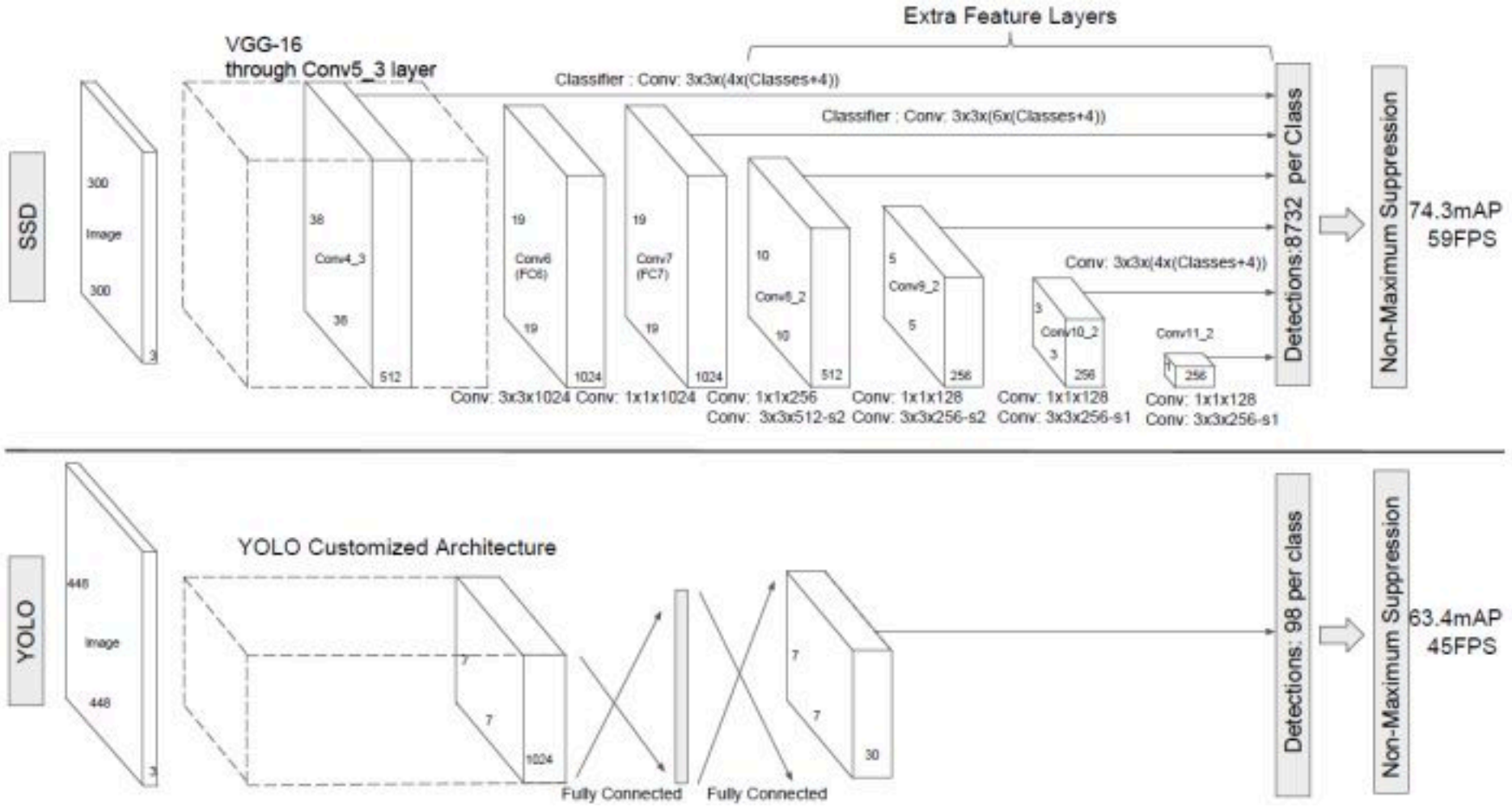
(a) Featurized image pyramid

(b) Single feature map

(c) Pyramidal feature hierarchy

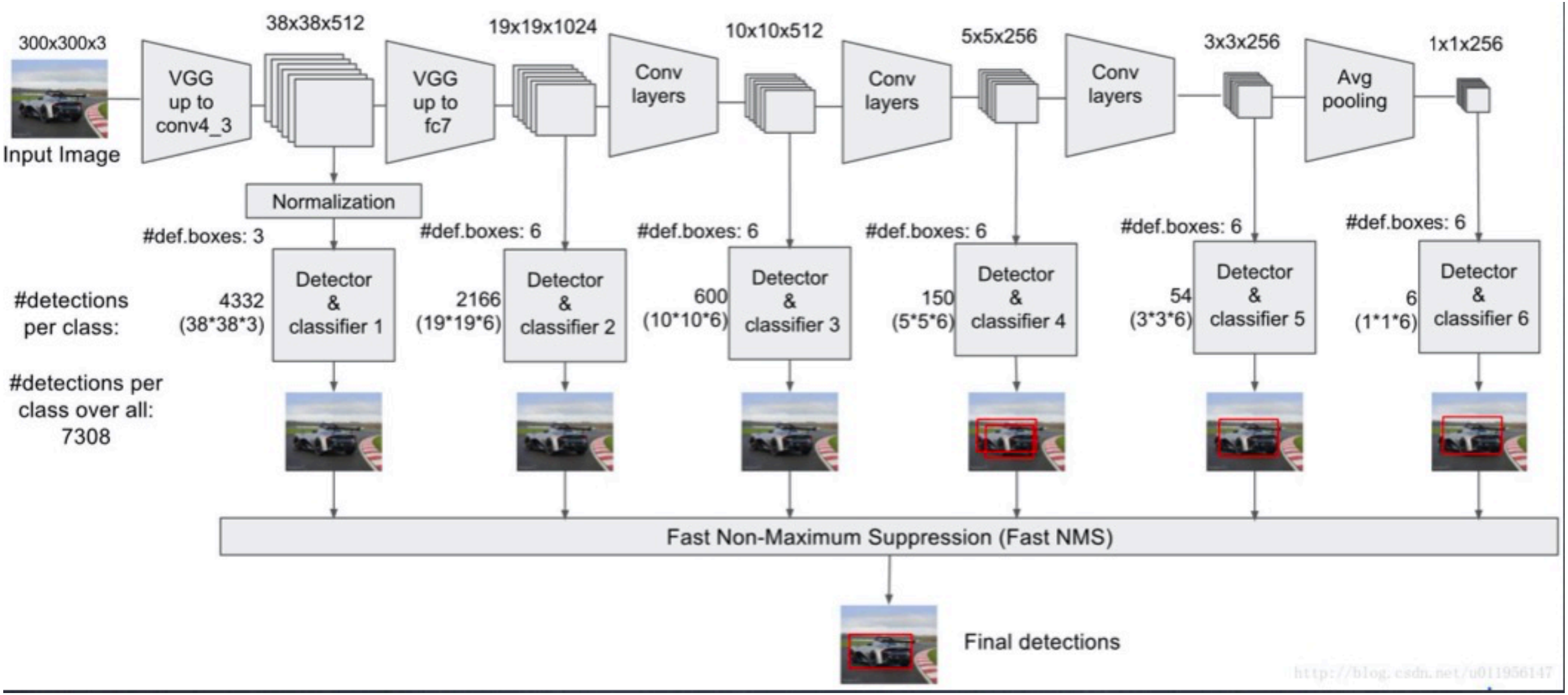
(d) Feature Pyramid Network

SSD （**Single Shot MultiBox Detector**）



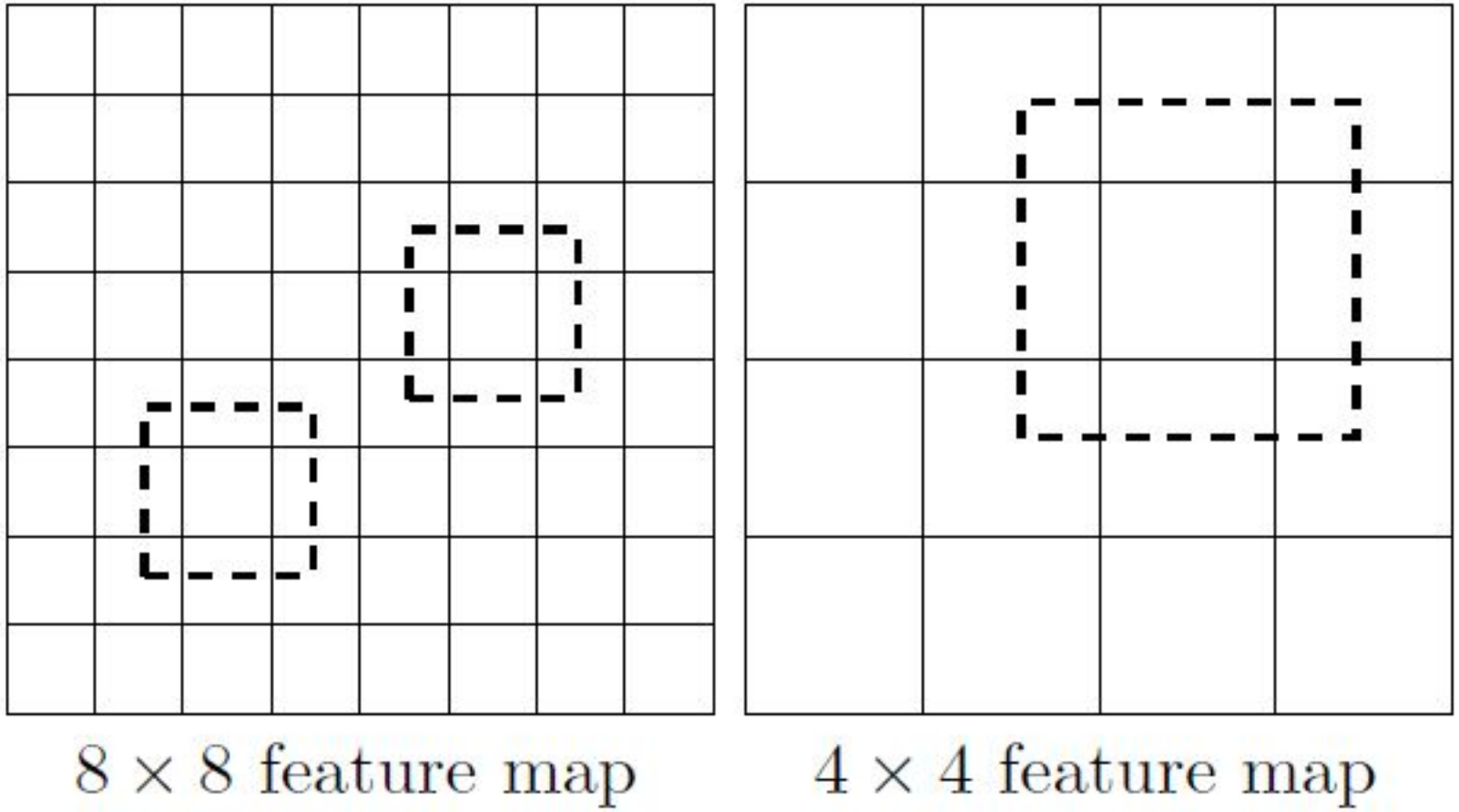
From： **Single Shot MultiBox Detector**

SSD （**Single Shot MultiBox Detector**）



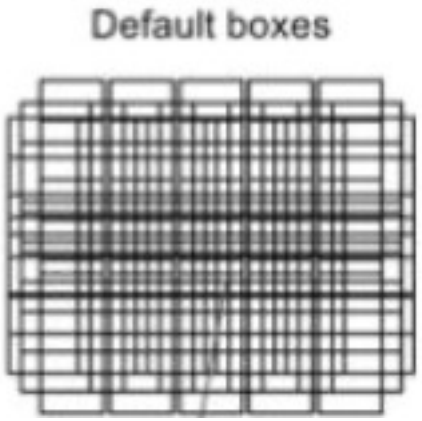
From：https://blog.csdn.net/u011956147/article/details/73028773

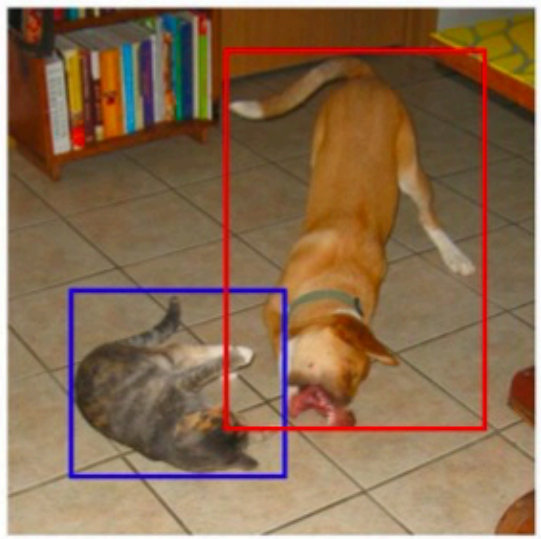
SSD （**Single Shot MultiBox Detector**）



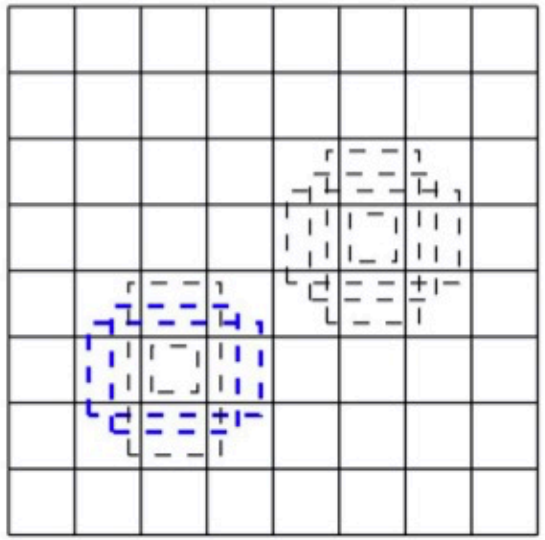
From： **Single Shot MultiBox Detector**

SSD （**Single Shot MultiBox Detector**）

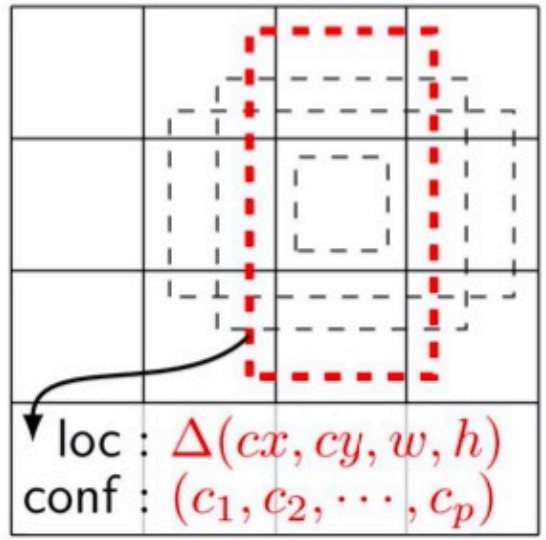




(a) Image with GT boxes



(b) 8×8 feature map



(c) 4×4 feature map

SSD （Single Shot MultiBox Detector）

Default box 生成规则

1. 以每个feature pixel为中心生成一系列同心的Default box

2. 使用m(SSD300中m=6) 个大小不同的feature map 做预测，最底层的feature map的scale 为 Smin=0.2, 做高层的为Smax=0.9, 其他层由公式算得。

$$s_k = s_{\min} + \frac{s_{\max} - s_{\min}}{m-1}(k-1), \quad k \in [1, m]$$

3.使用不同得ratio值, [1,2,3,1/2,1/3], 计算default box 的 w, h.

$$w_k^a = s_k\sqrt{a_r} \qquad h_k^a = s_k/\sqrt{a_r}$$

For the aspect ratio of 1:

$$s'_k = \sqrt{s_k s_{k+1}}$$

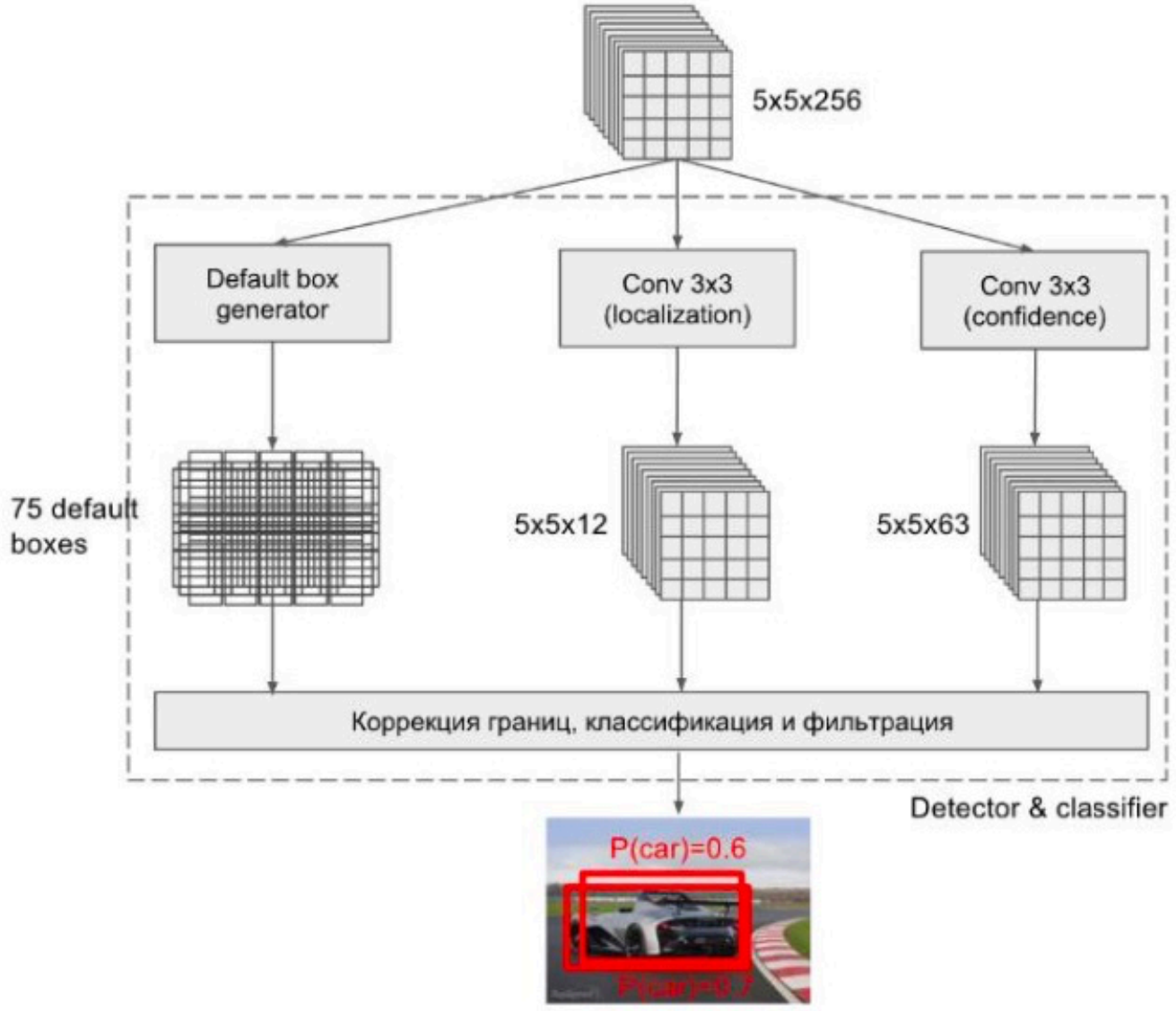
So totally 6 default boxes per feature map location

SSD （**Single Shot MultiBox Detector**）

Localization

Confidence

Anchor box



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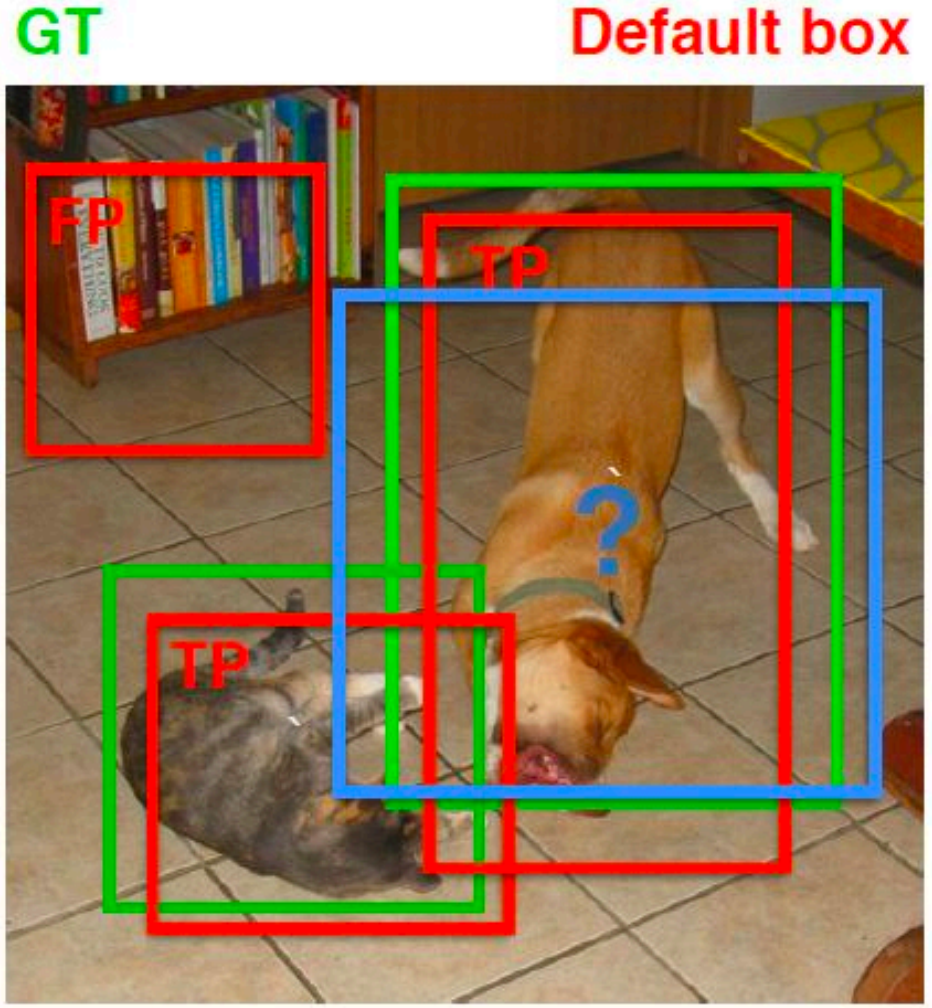

SSD （**Single Shot MultiBox Detector**）

1. confidence

feature map:5*5

output channel: n-boxes * n_classes

4 21

reshape

output [21*4, 5, 5] -> [-1,n_classes]= [100, 21]

C H W

2. Localization

output channel: n-boxes * 4

output [4*4,5,5] -> [-1, 4] =[100,4]

3. 生成default box

output [8*4, 5, 5] -> [-1, 8] = [100,8]