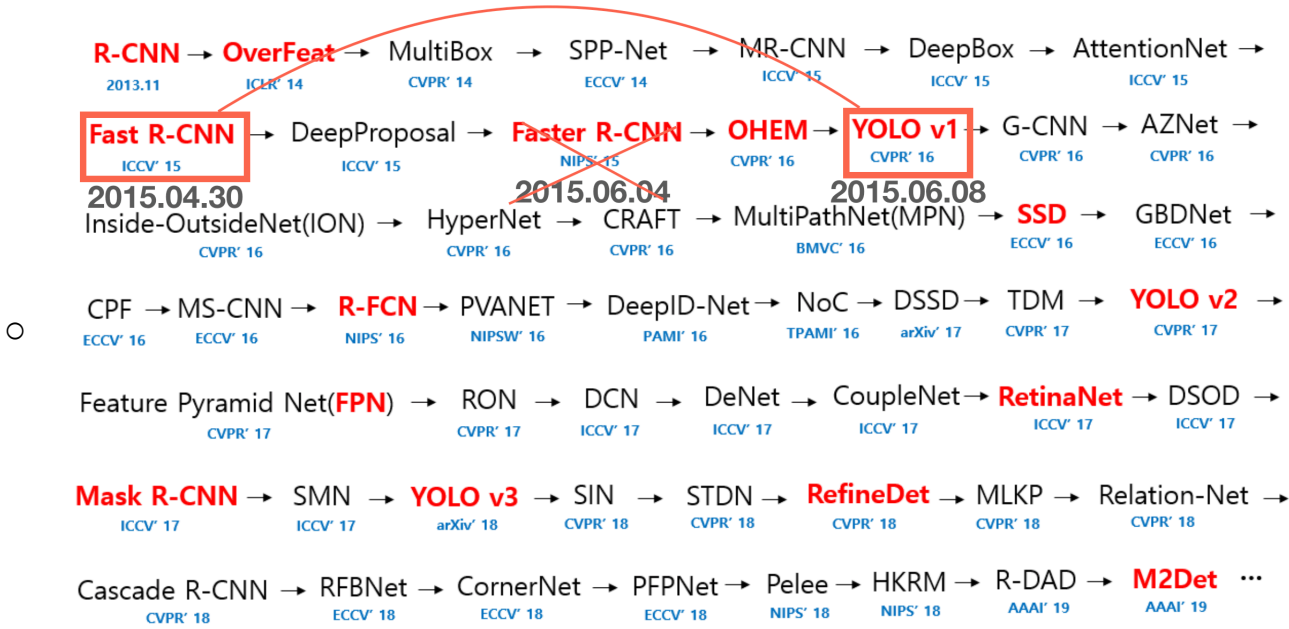# Faster Rcnn

2019/11/20   14:32

历时3周通勤，终于完整的看完一篇deep learning paper-frcnn，特记录一些 key element。

- 发布时间节点15年，对标的是fast rcnn

- New features
  - faster ,accuracy ,end 2 end two fcn stage algorithm
  - selective search 换成了 Region proposql Networds RPN网络
    - slide Windows
    - Region proposal ——positive/negative classification   and regression
      - Anchor
        - Translation-Invariant Anchors【让分类更精准】——在deep neural network 下
      - Convolution feature   shared
      - loss function
        - **regression：L1 loss**
          - For bounding box regression, we adopt the parameterizations of the 4 coordinates following [5]:

            $$t_x = (x - x_a)/w_a, \quad t_y = (y - y_a)/h_a,$$
            $$t_w = \log(w/w_a), \quad t_h = \log(h/h_a),$$
            $$t_x^* = (x^* - x_a)/w_a, \quad t_y^* = (y^* - y_a)/h_a, \quad (2)$$
            $$t_w^* = \log(w^*/w_a), \quad t_h^* = \log(h^*/h_a),$$

            where x, y, w, and h denote the box's center coordinates and its width and height. Variables x, x_a, and x^* are for the predicted box, anchor box, and ground-truth box respectively (likewise for y, w, h). This can

        - classification：cross   entropy
      - multi scale
        - 3 aspects and 3 area size
      - training rpns
        - 提取整张图中score最高的256个anchor形成256个image作为扔进roi polling 的input
    - roi部分
      - roi在fast rcnn全新提出，具体要去看fast rcnn的论文
  - 参考了overfeat思想
- Training step
  - *Alternating training*. In this solution,
    - **Rpn 和 fast rcnn 交替训练**
      - **rpn训好训fast rcnn**
      - **Fast rcnn训好训rcn**
      - **交替直到指标收敛**

    - **4-Step Alternating Training**.
  - *Approximate joint training*.
    - 直接unify训练，日常实战工程都这样干
  - *Non-approximate joint training*.