

# HW3 Instance Segmentation

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# Outline

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# Introduction

- The purpose of this project is to train a instance segmentation model on **tiny PASCAL VOC** dataset.
- Only **ImageNet-pretrained** model can be used.
- There are only 1349 training data provided in the tiny PASCAL VOC, so we need to deal with **overfitting problem**.

# Methodology

- In this project, I used **Mask-RCNN** with **Resnet50 and FPN** as the backbone, which was ImageNet pretrained.

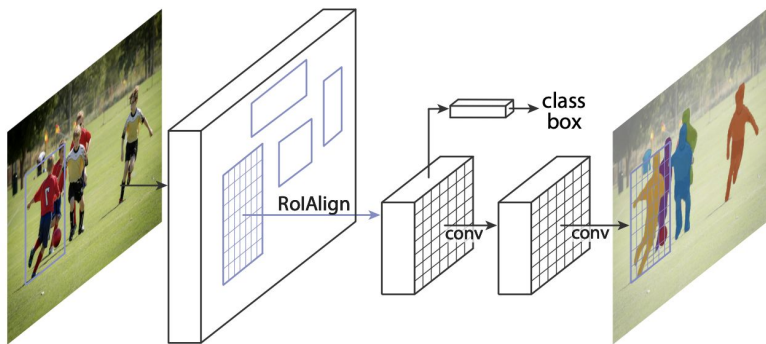
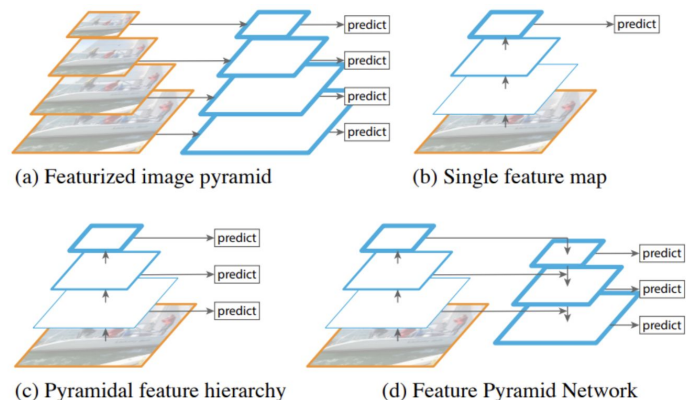


Figure 1. The **Mask R-CNN** framework for instance segmentation.



# Methodology (cont.)

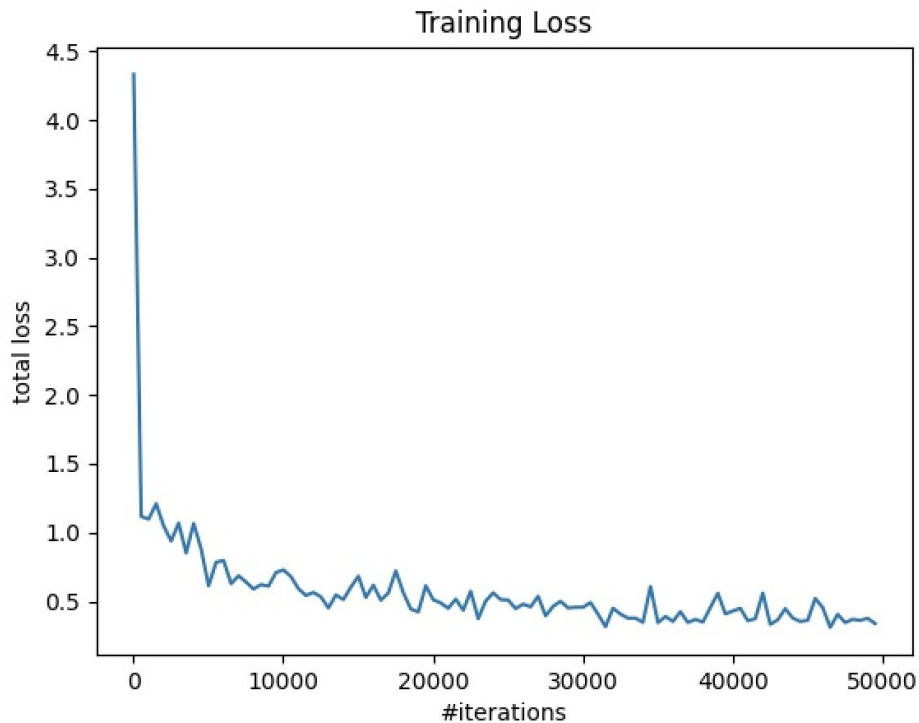
- Hyperparameters
  - Batch size: 2
  - Learning rate: 0.00025
  - Iterations: 50k
  - Testing thresh: 0.5 (to get value of mAP@0.5)
- Network architecture
  - Head: Mask-RCNN
  - Backbone: Resnet50 with feature pyramid network
  - Using package [Detectron2](#), which is provided by Facebook AI Research (FAIR)

# Experiment

- Hardware information
  - CPU: i9-10900X
  - GPU: RTX 2080ti \* 1
  - RAM: 62G
- Training time for 50k iterations: 4.8 hr

# Experiment (cont.)

- Loss
- mAP@0.5: 0.49298



# Code and Reference

- [Code Github link](#)
- [Detectron2](#)
- [Detectron2 Model Zoo](#)