Now Result

In this part, I will show the way I tried to improve the performance and the result of that.

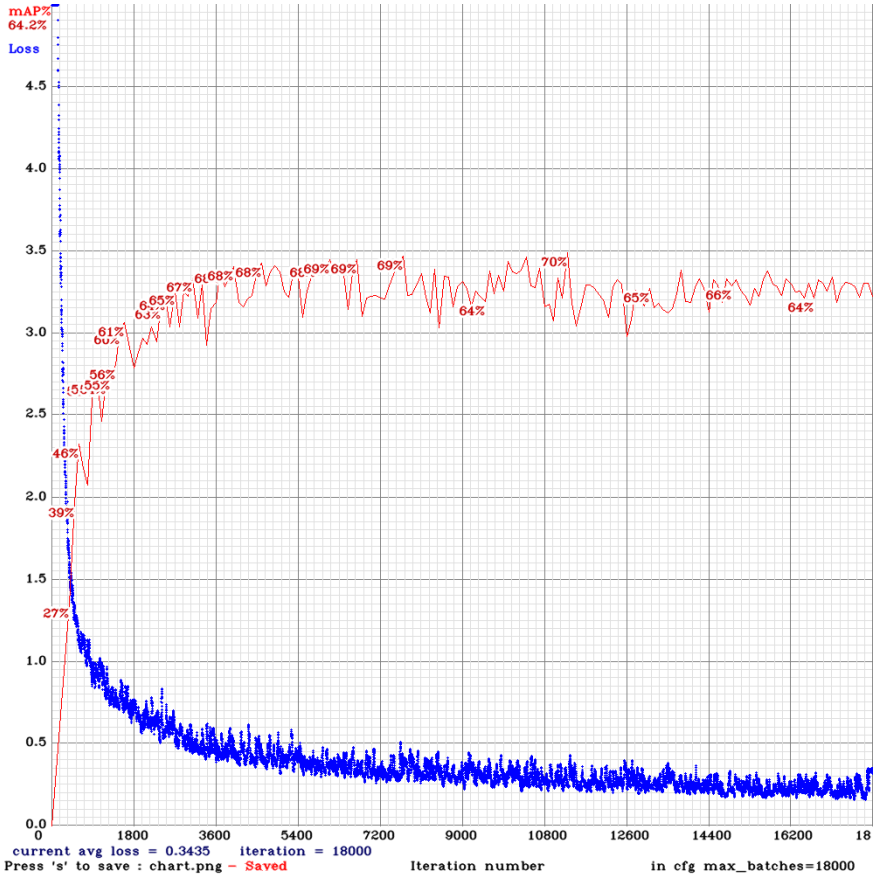
1.Try different pre-trained weight and let other parameters as default

conv.15 and conv.11 is for yolov3-tiny and AlexyAB does not tell the difference of these two weights. conv.74 is trained for for yolov3, but since some part of yolov3-tiny is as same as yolov3 so I also try it.

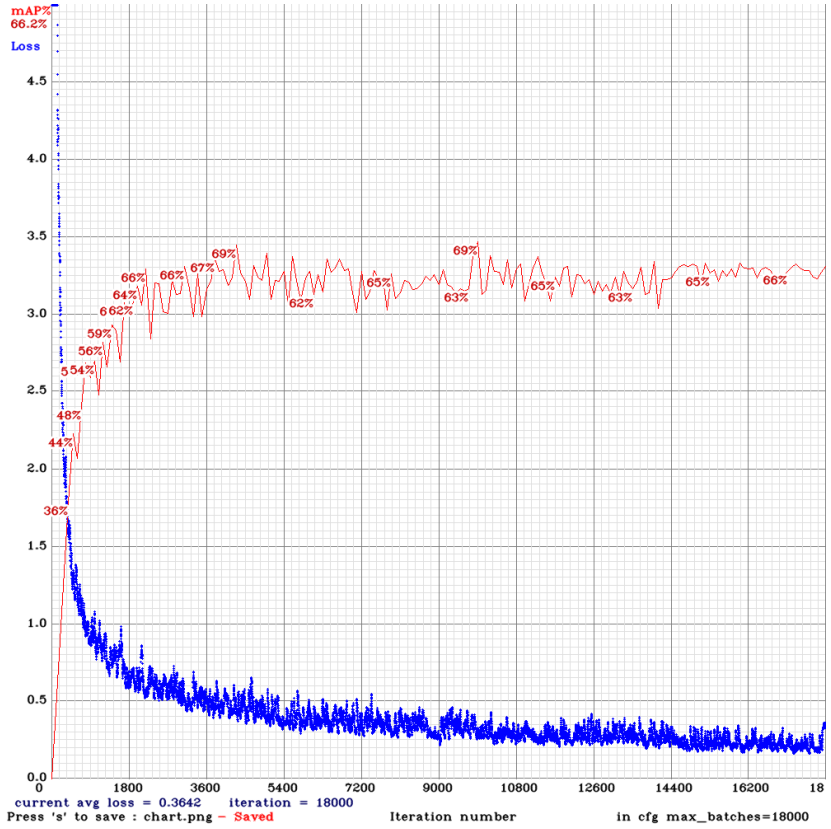
Here is the table shows the result

Class	conv.15	conv.11	conv.74
Batteries(AP)	74.78	86.67	66.67
CansTins(AP)	91.67	100.00	72.98
Cardboard(AP)	70.16	54.29	54.54
FoodWaste(AP)	91.90	87.18	81.99
GeneralWaste(AP)	56.39	46.78	36.49
Glass(AP) &	31.85	44.74	20.24
Paper(AP) &	51.90	53.20	60.20
Papercups(AP)	100	100	100
Plastics(AP)	58.3	50.68	19.16
MAP	69.74	69.28	56.92

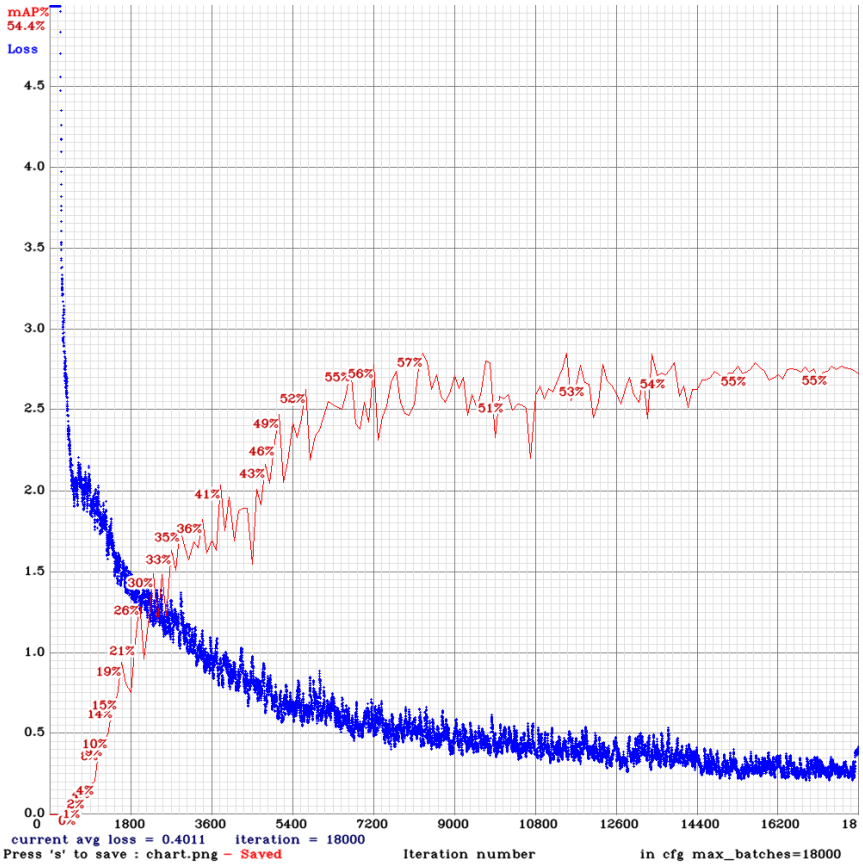
Here is the figure about the map during the training



Conv.15



Conv.11



Conv.74

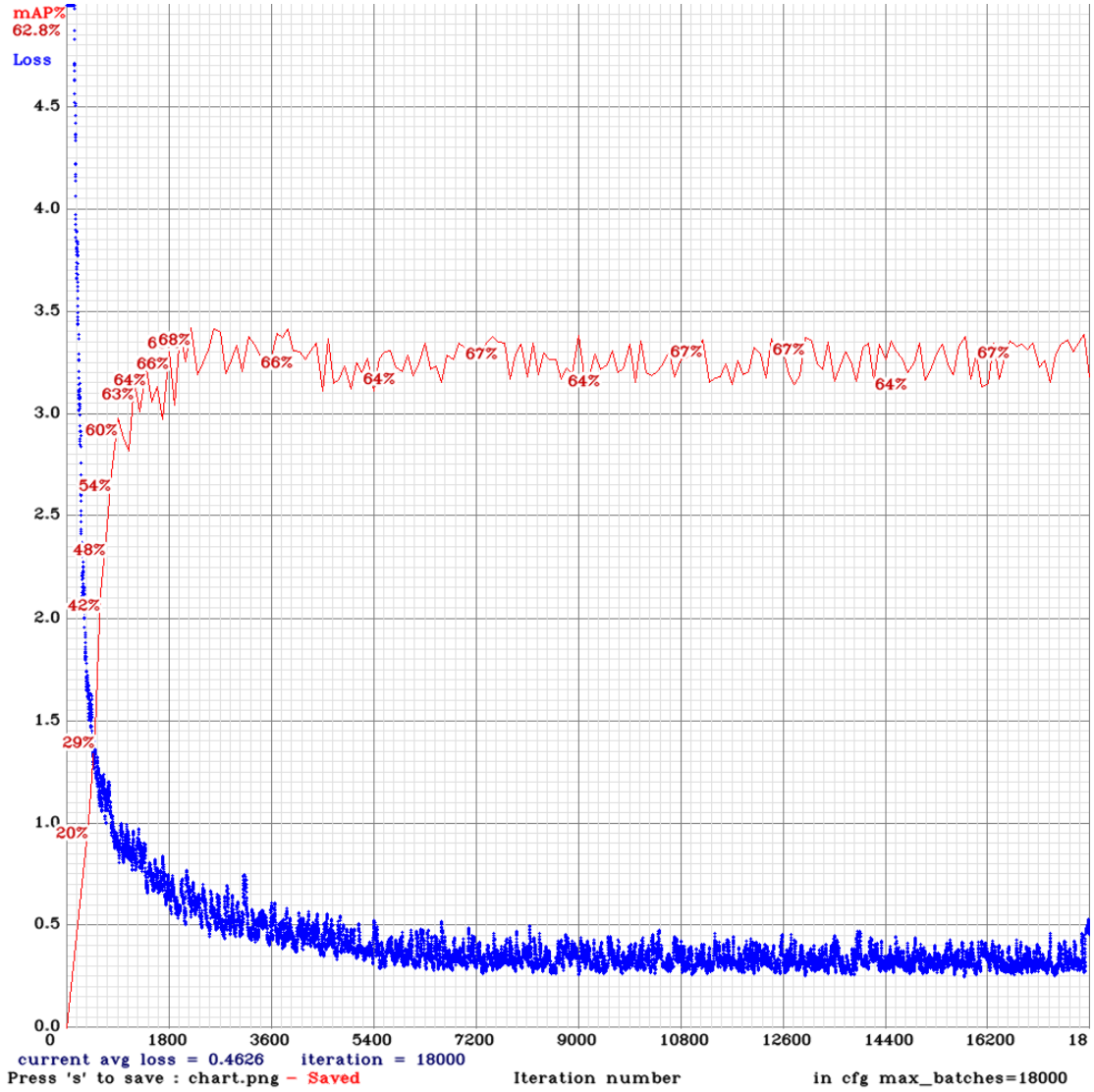
2.Try different learning steps

Trying different learning steps. Conv.15 is default. Set learning rate as 0.001 and burn in as 400 epoch, the learning rate will down to 0.0001 at 14400 epoch and 0.00001 at 16200 epoch.
Pv1 is only changes the epoch when the rate is down, change to 0.0001 at 5400, 0.00001 at 10800, 0.000001 at 14400

Here is the table shows the result

Class	conv.15	PV1
Batteries(AP)	74.78	64.35
CansTins(AP)	91.67	95.35
Cardboard(AP)	70.16	53.99
FoodWaste(AP)	91.90	88.51
GeneralWaste(AP)	56.39	52.33
Glass(AP) &	31.85	38.38
Paper(AP) &	51.90	60.17
Papercups(AP)	100	100
Plastics(AP)	58.3	61.70
MAP	69.74	68.31

Here is the figure about the map during the training

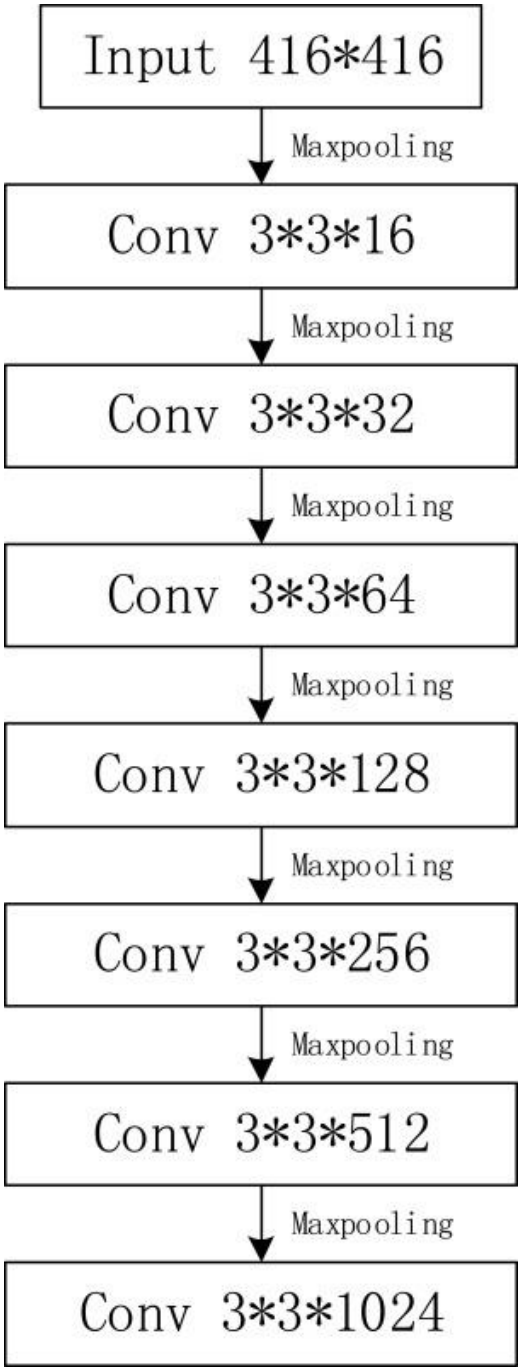


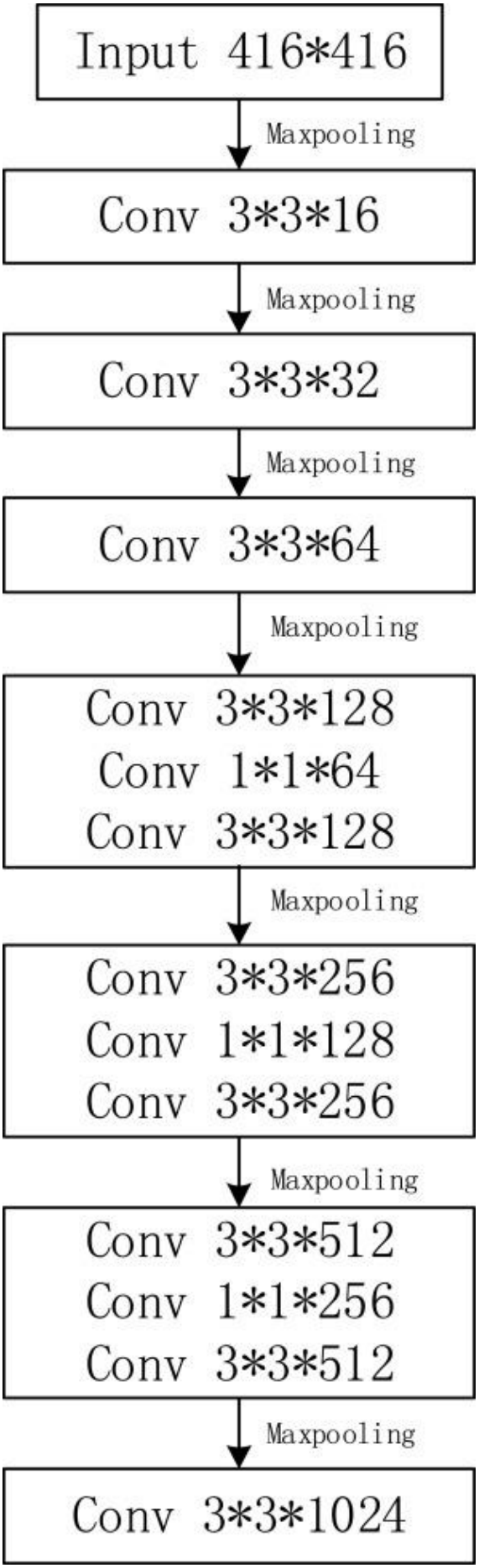
PV1

2.Add more layers

Trying to add more layers.

Conv.15 is default as figure show below. L1 is new layer as figure show below.


Input 416*416
Maxpooling
Conv 3*3*16
Maxpooling
Conv 3*3*32
Maxpooling
Conv 3*3*64
Maxpooling
Conv 3*3*128
Maxpooling
Conv 3*3*256
Maxpooling
Conv 3*3*512
Maxpooling
Conv 3*3*1024

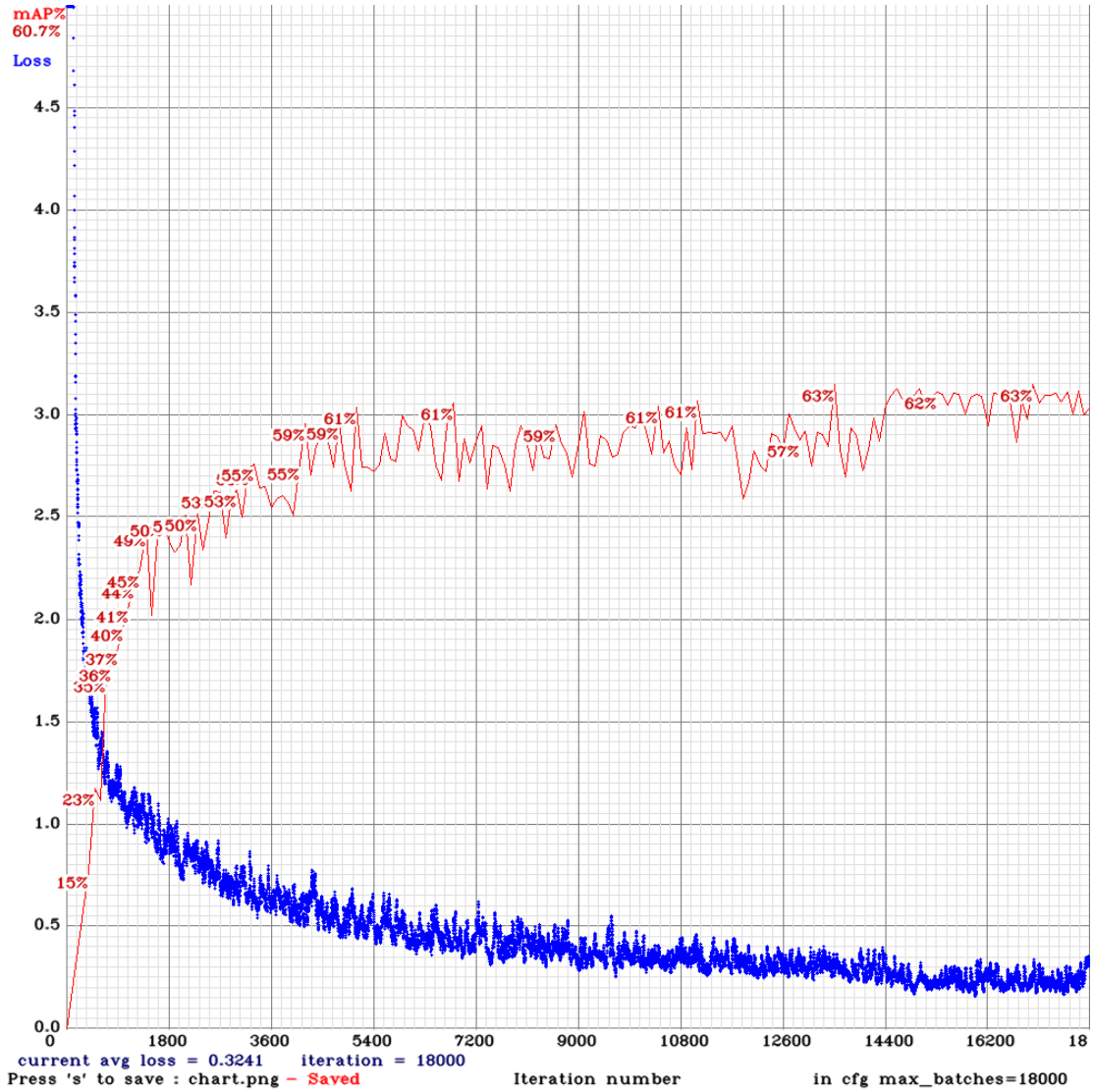

Input 416*416
Maxpooling
Conv 3*3*16
Maxpooling
Conv 3*3*32
Maxpooling
Conv 3*3*64
Maxpooling
Conv 3*3*128
Conv 1*1*64
Conv 3*3*128
Maxpooling
Conv 3*3*256
Conv 1*1*128
Conv 3*3*256
Maxpooling
Conv 3*3*512
Conv 1*1*256
Conv 3*3*512
Maxpooling
Conv 3*3*1024

Default L1s

Here is the table shows the result

Class	conv.15	L1
Batteries(AP)	74.78	56.65
CansTins(AP)	91.67	81.05
Cardboard(AP)	70.16	62.07
FoodWaste(AP)	91.90	85.61
GeneralWaste(AP)	56.39	54.45
Glass(AP) &	31.85	22.51
Paper(AP) &	51.90	62.79
Papercups(AP)	100	100
Plastics(AP)	58.3	40.79
MAP	69.74	62.88

Here is the figure about the map during the training



L1