Part-1

Did you upload final CSV file on Kaggle: **Yes**

1. My best mAP on Kaggle: 43.258%
2. Factors which helped improve my model
    a. Data augmentation by RandomResizedCrop, RandomHorizontalFlip.
    b. Adding BatchNormalization to each convolution layer.
    c. Adding residual connections.
    d. Using Adam as optimizor.
    e. Increasing epochs to 200.
    f. Expanding and shrinking channel sizes in the network.
    g. Leaning rate decay at the 100th epoch.
3. Table for final architecture:

Layer No.	Layer Type	Kernel size (for conv layers)	Input | Output dimension	Input | Output Channels (for conv layers)
1	conv, bn, relu	3	227 | 227	3 | 16
2	conv, bn, relu	3	227 | 227	16 | 20
3	conv, bn, residual, relu	3	227 | 227	20 | 16
4	maxpool	2	227 | 113	-
5	conv, bn, relu	3	113 | 113	16 | 8
6	conv, bn, residual, relu	3	113 | 113	8 | 16
7	maxpool	2	113 | 56	-
8	conv, bn, relu	3	56 | 56	16 | 8
9	conv, bn, relu	3	56 | 56	8 | 5
10	maxpool	2	56 | 28	-
11	conv, bn, relu	3	28 | 28	5 | 10
12	maxpool	2	28 | 14	-
13	linear	-	1960 | 250	-
14	linear	-	250 | 21	-

The initial network provided to you can be considered as the BaseNet. A very important part of deep learning is understanding the ablation studies of various networks. So we would like you to do a few experiments. Note, this **doesn't need to be very exhaustive** and can be in a cumulative manner in an order you might prefer. Fill in the following table :

Serial #	**Model architecture**	**Best mAP on test set**
1	BaseNet	0.17

2	BaseNet + BatchNormalization	0.32
3	BaseNet + BatchNormalization + Residual	0.40
4	BaseNet + BatchNormalization + Residual + Data Augmentation + Learning Rate Decay	0.43

Part-2

1. My best mAP value on Kaggle : 47.908%
2. Did you upload final CSV file on Kaggle: **Yes**
3. My final loss value : 1.9910
4. What did not work in my code(if anything): Nothing
5. Sample Images from my detector from PASCAL VOC:

Sample Images from YOLO on YOLO to get **Extra Credit** for YOLO :