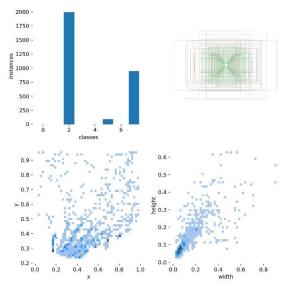
Computer Vision hw4

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Q1

See the following figure, the classes 5 and 7 are less than the class 2. Therefore, I calculate the count of the class 5 and 7 every image and get the proportion of training set from large to small. The rest of the images are the valid set.



	Order_sample	Random_sample	My_sample
Train_distribution	train order sample distribution 1400 1400 1400 1000 800 600 700 700 700 700 700 700 700 700 7	train random_sample distribution 1750 1760 1290 1000 790 500 239 65 75 75 75 75 75 75 75 75 75	train my, sample distribution 1756 1200 - 1250 - 1
Val_distribution	val order_sample distribution 236 300 700 150 150 300 42 44 44 44 44	val random, sample distribution 200 200 200 200 200 200 200 2	val my_sample distribution 140 140 140 100 00 00 00 00 00
mAP@.5:.95 all car bus truck	0.399 0.431 0.449 0.317	0.391 0.426 0.473 0.274	0.402 0.443 0.434 0.328

Q2

- Firstly, I use the VGG16 to extract features.
- I used PCA to reduce the dimension to 128.
- I use Kmeans to cluster into 5 clusters.
- I use uniform sample in every cluster.

	Random_sample	My_method
Selected	-	train uniform distribution
mAP@.5:.95 all car bus truck	0.479 0.511 0.51 0.418	0.489 0.517 0.536 0.414

Q3

- Firstly, I used the pretrained weight on Q2 to generate the pseudo label on Q3.
- Train on 200 label data (Q2) and 1200 pseudo label data (Q3)
- Finetune on Q2 dataset.
- Finetune on Q2 dataset with focal loss.

	Pseudo label	Pseudo_label_finetune	Pseudo_label_finetune
	-		_focal_loss
mAP@.5:.95			
	0.515	0.519	0.524
all	0.515	0.521	0.523
car	0.574	0.58	0.589
bus	0.454	0.457	0.459
truck	,	3.107	3.109