

Orange Labs Beijing in ILSVRC2014

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It is the second time that we participate in ILSVRC, compared with 2013, we have great improvements

In DET, inspired by Ross's rcnn method

- detect 200 classes in test images with selective search
- pretrained CNN models in training set of LOC task
- fine-tuning in the detection training set
- neural network-based classification (201 classes including background)
- bounding box regression. In the validation dataset we get 0.272 mAP in validation set.

Three steps are conducted in LOC

- train seven classification models by deep learning in different network structures and parameters, and test with data augmentations (crop, flip and scale)
- test images are segmented into ~2000 regions by selective search algorithm, then the regions are classified by the above classifiers into one of 1000 classes
- regions with highest possibility classes generated by the classification model are selected as the final output
- In validation set of classification, the top-5/1 error rate is 0.3680 and 0.1526 compared with the last year's 0.25194. For location task, the best performance is about 0.45 in validation data set.

Experiments In CLS+LOC task

Model ID	Comments on Model	Top-5/1 Error for CLS in Validation Set
M1	10-view image augmentation	0.1597 / 0.3784
M2	90-view image augmentation	0.1526 / 0.3680
M3	90-view image augmentation +training in training and validation Set	N/A
M4	LOC 1vs1, one classification has one region, if corresponding region does not exist, random select one	N/A
M5	top-5 most possible regions in CLS label set	N/A

CLSLOC2014_RUN_ID	Location Error Rate	Classification Error Rate
CLS2014_RUN1(M2+M4)	0.443422	0.15158
CLS2014_RUN2(M3+M4)	0.442198	0.14797
CLS2014_RUN3(M2+M5)	0.428277	0.18898
CLS2014_RUN4(M3+M5)	0.427042	0.18593
CLS2014_RUN5(M1+M4)	0.449397	0.16137

Experiments in DET task

Model ID	Comments on Model	mAP
M6	model from training set 2013	0.25043
M7	model from Training set 2014 + Alex model	0.26087
M8	model from 2014 Training Set + NYU model	0.25595
M9	bounding box regression	N/A

DET2014_RUN_ID	mAP
DET2014_RUN1(M6+M4)	0.265701
DET2014_RUN2(M7+M4)	0.27703
DET2014_RUN3(M8+M5)	0.271499
DET2014_RUN4(M7)	0.269317
DET2014_RUN5(M8)	0.264307

Two apps and web demo



<https://play.google.com/store/apps/details?id=com.orange.labs.deepobject>
<https://play.google.com/store/apps/details?id=com.orange.labs.dogreco>
<http://123.127.237.160/deepClassify/index.php>