CPSC8810 Deep learning Final Report: Detect bully and victim

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Labeling Image

We used a tool called 'LabelImg'[1] to label all images in 9 bullying classes. Object names are set as 'bully' and 'victim'. All annotations are uploaded to folder. For images do not contain a victim, we only box the bully object. For images about people bullying each other, we identified both as bully. Meanwhile, we deleted dozens of images that have nothing to do with the title.

SSD Model

We learned from online source code of a SSD object based on VGG[2]. The repository contains a TensorFlow re-implementation of the original Caffe code. At present, it only implements VGG-based SSD networks (with 300 and 512 inputs), but the architecture of the project is modular, and should make easy the implementation and training of other SSD variants (ResNet or Inception based for instance). Present TF checkpoints have been directly converted from SSD Caffe models.

Training Process

We randomly select 20% of images from each class into test set. All images from different classes are mixed in 'JPEGImages' folder and all xml files are mixed in 'Annotations' folder. These images and xml files are then converted to a tfrecord format data, which will be used for training and evaluation afterwards. We deleted all images that are not jpeg type and do not have an xml file.

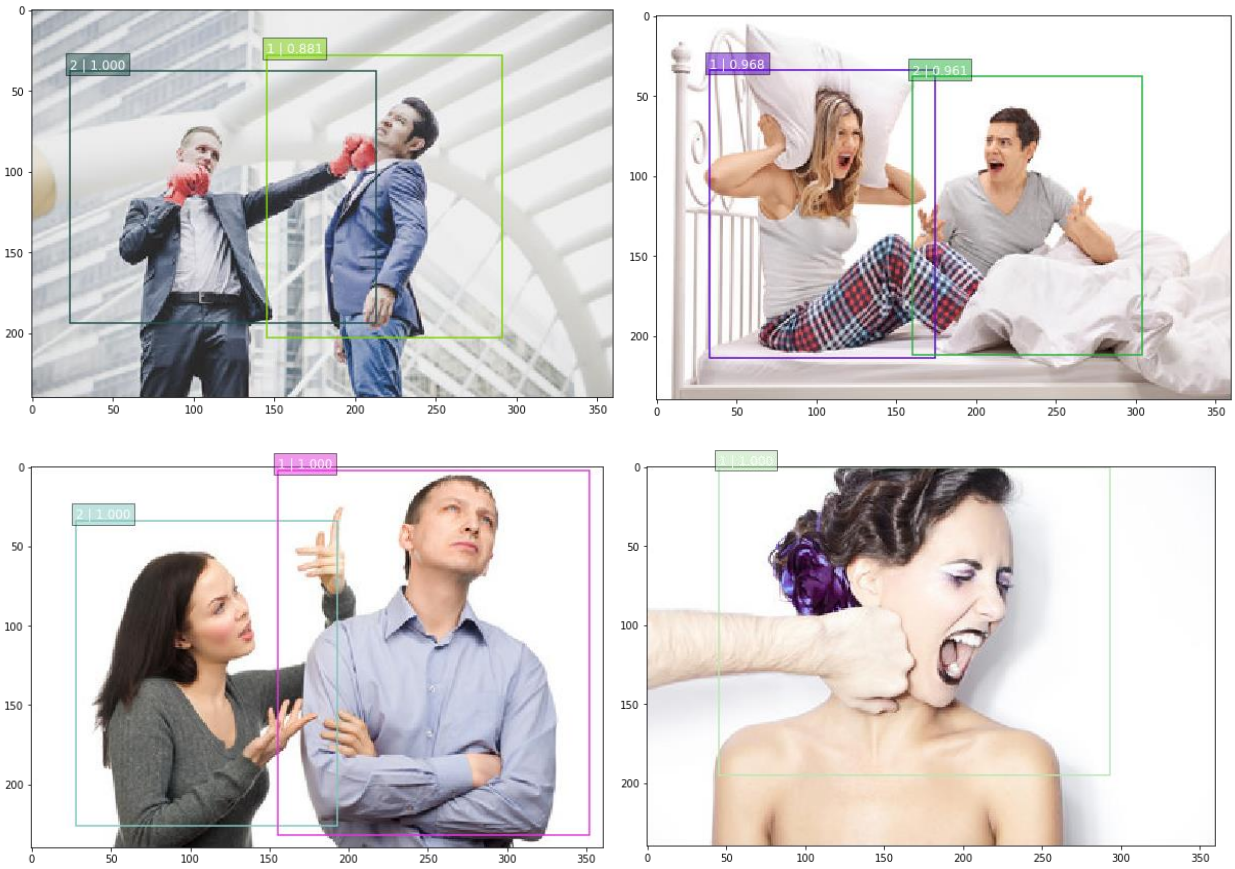
Our training process started from an existing checkpoint '[SSD-300 VGG-based]'. Period work will be saved as a checkpoint after a certain number of steps and we are able to evaluate a checkpoint with a certain index.

Evaluating

The evaluating script can give us a result of mAP on all images of dataset. As we can see the mAP is about 0.82.

```
INFO:tensorflow:Evaluation [1/10]
INFO:tensorflow:Evaluation [2/10]
INFO:tensorflow:Evaluation [3/10]
INFO:tensorflow:Evaluation [4/10]
INFO:tensorflow:Evaluation [5/10]
INFO:tensorflow:Evaluation [6/10]
INFO:tensorflow:Evaluation [7/10]
INFO:tensorflow:Evaluation [8/10]
INFO:tensorflow:Evaluation [9/10]
INFO:tensorflow:Evaluation [10/10]
AP_VOC07/mAP[0.823885918003565]
AP_VOC12/mAP[0.80960784313725487]
INFO:tensorflow:Finished evaluation at 2019-04-30-17:37:30
Time spent : 9.272 seconds.
Time spent per BATCH: 0.927 seconds.
```

We can also view the prediction on images. We randomly selected four predictions from a checkpoint. Class 1 stands for victim and 2 stands for bully



Run our code

We have provided a python script “test.py” stored in the folder “results”, it accepts one command line argument which is the path of the test set folder. After execution of the “test.py”, it will store all the labeled images in the ‘labeledImages’ folder at the same level, i.e. ‘results/labeledImages’. You can check our results from these labeled images.

Reference

[1] https://github.com/tzutalin/labelImg

[2] https://github.com/balancap/SSD-Tensorflow

[3]https://drive.google.com/file/d/0B0qPCUZ-3YwWUXh4UHJrd1RDM3c/view