Mask R-CNN workflow

Installation using conda

conda env create -f environment.yml

conda activate mask\_rcnn

Dataset Format

The structure of the dataset should be as follows:

1 main folder which has subdirectories containg the train, validation and test dataset.

e.g.

Link to dataset →

*https://drive.google.com/drive/u/0/folders/1Rd5806Q\_ayqph6rV9d6Xaopb11dqhFCZ*

ml\_stawberry/

train/

val/

test/

json\_files/

The json files are used to create the ground truth annotated mask needed to train the models.

Training

python berries\_train.py

Configuration parameters for training can be altered by inheriring the *Config class* see *BerryConfig* class for example in berries\_train.py script

It is advisable to train from epoch 16 weights file can be found in

Evaluation

python berries\_eval.py <paths\_to\_weights> <path\_to\_data> <path\_to\_store\_results>

N.B. The script is currently performing test on the validation dataset, As of now, the test datset has not yet been annotated by Redbrick. You need to supply the parent directory containing the validation dataset, see line 100 in berries\_eval.py.

*Number of images in validation dataset – 50*

*mean AP (mAP) -* ***0.564***

*mean AR (mAR) -* ***0.541***

F1 score – ***0.552***

***Future Improvement.***

***1. Add Data Augmentation techniques.***

***2. Experiment with different image resolutions in the Config class***

***3. Use different batch sizes during training. Current configuration can only support one image to be fitted into GPU due to hardware limitations.***

***4. Experiment with different learning rates.***

***5. Which weights are better for transfer learning Imagenet or Coco?***