1. Preprocessing:

1.1 Merge RGB images with MiCaSense scripts.

Install Micasense library in micasense directory.

Install exiftool.exe in PC or Mac by following instructions at:

https://exiftool.org/

Dataset is located in: preprocsssing/merge\_align/dataset

Input data directory: RGBInput

Your output data directory: RGBOutput

Merge process:

python mergealignmentRGB.py

1.2 Draw bounding boxes for images to generate XML file

Install image label tool for PC based on instructions:

<https://github.com/tzutalin/labelImg>

Label image in PC:

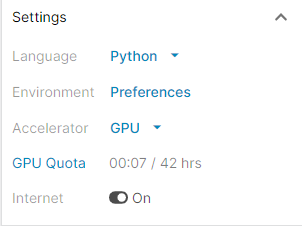
Input data directory: RGBOutput

Output data directory: annotation\_voc

1. Kaggle Jupyter Notebook

2.1 Create your own kaggle account.

Make sure the setting is same as below:



2.2 Upload dataset:

click Data in left menu,

select YOUR DATASETS

click new Dataset button

Give dataset title: tutorialforyolodataset

Click Select Files for Upload button to upload zipped file:

tutorialforyolodataset.zip

2.3 Upload Jupyter Notebook scripts

Click Notebooks in left menu, or upload tutorialforyolo.ipynb file

Select YOUR WORK

Give script name: TutorialForYOLO

Write scripts in two sections

Section 1: Data Preprocessing (This part mainly did off-line)

Section 2: Prepare YOLO format, train, evaluation.

On right, click Add data button,

input: select the dataset you select tutorialforyolodataset

Output: /kaggle/working

(Reason is that this directory you can read/write files)

Section 2 script summary:

Copy data from input directory to /kaggle/working directory.

Prepare YOLO format XML file

Create anchors.

Train process,

Evaluation process.

Prediction

1. Step to run in ARC machine huckleberry1.arc.vt.edu

1. Upload tutorialforyolodataset.zip file to ARC machine and unzip it (unzip tutorialforyolodatasetForArc.zip).

For example /home/Kshitiz/tutorialForYOLO

2. Request resource to use your account.

salloc -N 2 --gres=gpu:4 --partition=normal\_q --account=Introtogds --exclusive

--time=72:00:00

3. Set up environment:

module load gcc cuda Anaconda3 jdk

source activate powerai16\_ibm

1. python xml\_to\_yolo\_for\_train.py

python xml\_to\_yolo\_for\_test.py

1. # Get anchor information

python kmeans.py, #update the results in model\_data/yolo\_anchors.txt

1. # Train the model

python train.py

1. # Evaluate the model

python yolo\_evaluation.py

1. # Calculate mAP

python yolo\_mAP\_Calculation.py