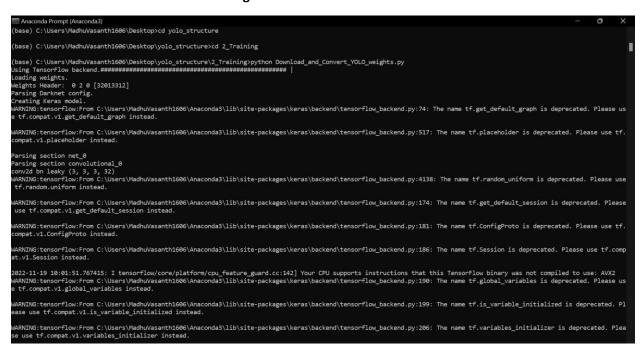**TRAINING YOLO**

Team ID	PNT2022TMID00624
Project Name	AI-Based Localization and Classification of Skin Disease with Erythema

Download and convert Pretrained weights:

```
Layer (type)                    Output Shape         Param #     Connected to
==================================================================================================
input_1 (InputLayer)            (None, None, None, 3 0

conv2d_1 (Conv2D)               (None, None, None, 3 864         input_1[0][0]

batch_normalization_1 (BatchNor (None, None, None, 3 128         conv2d_1[0][0]

leaky_re_lu_1 (LeakyReLU)        (None, None, None, 3 0          batch_normalization_1[0][0]

zero_padding2d_1 (ZeroPadding2D (None, None, None, 3 0          leaky_re_lu_1[0][0]

conv2d_2 (Conv2D)               (None, None, None, 6 18432       zero_padding2d_1[0][0]

batch_normalization_2 (BatchNor (None, None, None, 6 256         conv2d_2[0][0]

leaky_re_lu_2 (LeakyReLU)        (None, None, None, 6 0          batch_normalization_2[0][0]

conv2d_3 (Conv2D)               (None, None, None, 3 2048        leaky_re_lu_2[0][0]

batch_normalization_3 (BatchNor (None, None, None, 3 128         conv2d_3[0][0]

leaky_re_lu_3 (LeakyReLU)        (None, None, None, 3 0          batch_normalization_3[0][0]

conv2d_4 (Conv2D)               (None, None, None, 6 18432       leaky_re_lu_3[0][0]

batch_normalization_4 (BatchNor (None, None, None, 6 256         conv2d_4[0][0]

leaky_re_lu_4 (LeakyReLU)        (None, None, None, 6 0          batch_normalization_4[0][0]

add_1 (Add)                     (None, None, None, 6 0          leaky_re_lu_2[0][0]
                                                                 leaky_re_lu_4[0][0]

zero_padding2d_2 (ZeroPadding2D (None, None, None, 6 0          add_1[0][0]

conv2d_5 (Conv2D)               (None, None, None, 1 73728       zero_padding2d_2[0][0]

batch_normalization_5 (BatchNor (None, None, None, 1 512         conv2d_5[0][0]
```

```
conv2d_73 (Conv2D)              (None, None, None, 1 32768       leaky_re_lu_70[0][0]

batch_normalization_71 (BatchNo (None, None, None, 1 512         conv2d_73[0][0]

leaky_re_lu_71 (LeakyReLU)       (None, None, None, 1 0          batch_normalization_71[0][0]

conv2d_58 (Conv2D)              (None, None, None, 1 4718592     leaky_re_lu_57[0][0]

conv2d_66 (Conv2D)              (None, None, None, 5 1179648     leaky_re_lu_64[0][0]

conv2d_74 (Conv2D)              (None, None, None, 2 294912      leaky_re_lu_71[0][0]

batch_normalization_58 (BatchNo (None, None, None, 1 4096        conv2d_58[0][0]

batch_normalization_65 (BatchNo (None, None, None, 5 2048        conv2d_66[0][0]

batch_normalization_72 (BatchNo (None, None, None, 2 1024        conv2d_74[0][0]

leaky_re_lu_58 (LeakyReLU)       (None, None, None, 1 0          batch_normalization_58[0][0]

leaky_re_lu_65 (LeakyReLU)       (None, None, None, 5 0          batch_normalization_65[0][0]

leaky_re_lu_72 (LeakyReLU)       (None, None, None, 2 0          batch_normalization_72[0][0]

conv2d_59 (Conv2D)              (None, None, None, 2 261375      leaky_re_lu_58[0][0]

conv2d_67 (Conv2D)              (None, None, None, 2 130815      leaky_re_lu_65[0][0]

conv2d_75 (Conv2D)              (None, None, None, 2 65535       leaky_re_lu_72[0][0]
==================================================================================================
Total params: 62,001,757
Trainable params: 61,949,149
Non-trainable params: 52,608
_____
None
Saved Keras model to yolo.h5
Read 62001757 of 62001757.0 from Darknet weights.

(base) C:\Users\MadhuVasanth1606\Desktop\yolo_structure\2_Training>
```

Train Yolov3 Detector:


```
Anaconda Prompt (Anaconda3) - python Train_YOLO.py                                                                                    —    □    ×

(base) C:\Users\MadhuVasanth1606\Desktop\yolo_structure\2_Training>python Train_YOLO.py
Using TensorFlow backend.
Create YOLOv3 model with 9 anchors and 6 classes.
Load weights C:\Users\MadhuVasanth1606\Desktop\yolo_structure\2_Training\src\keras_yolo3\yolo.h5.
Freeze the first 249 layers of total 252 layers.
8888888888888888888********************************9888888888888888888888888888888888888
['C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/0_1.jpg 168,59,258,102,0 182,110,286,144,0 190,155,264,180,0\n', 'C:/U
sers/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/0_10.jpg 93,90,189,153,0\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structu
re/Data/Source_Images/Training_Images/vott-csv-export/0_13.jpg 73,10,131,43,0 59,57,104,79,0 34,86,68,119,0\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Sourc
e_Images/Training_Images/vott-csv-export/0_16.jpg 251,102,289,135,0 160,111,187,132,0\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Imag
es/vott-csv-export/0_15.jpg 40,25,71,55,0 104,67,136,88,0 114,105,151,129,0 95,26,125,53,0\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training
_Images/vott-csv-export/0_18.jpg 68,109,152,171,0\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/0_17.jpg 121,59,1
80,130,1\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/0_20.jpg 124,65,181,133,0\n', 'C:/Users/MadhuVasanth1606/D
esktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/0_3.jpg 60,79,109,118,0 60,20,103,63,0 62,132,107,157,0 256,106,290,144,0\n', 'C:/Users/MadhuVasant
h1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/0_39.jpg 106,110,139,136,0 139,72,165,103,0 164,28,190,63,0 181,135,212,162,0\n', 'C:/Users/
MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/0_4.jpg 117,95,203,151,0\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Da
ta/Source_Images/Training_Images/vott-csv-export/0_40.jpg 219,77,274,127,2 42,107,79,133,2 124,110,176,149,2\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Sour
ce_Images/Training_Images/vott-csv-export/0_42.jpg 198,20,267,140,2 6,17,104,88,2 32,137,117,187,2 202,163,243,205,2\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/D
ata/Source_Images/Training_Images/vott-csv-export/0_8.jpg 103,90,186,154,0\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv
-export/0_9.jpg 63,54,121,185,0 173,80,244,135,0 187,146,222,198,0\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/
1_20.jpg 42,60,117,183,1 187,26,272,106,1 32,4,133,53,1\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/1_21.jpg 16
2,109,215,176,1 166,1,224,57,1 71,23,114,87,1\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/1_22.jpg 176,93,221,1
47,1 148,143,190,208,1 142,1,173,48,1\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/1_23.jpg 104,67,190,141,1 189
,4,248,52,1 63,152,205,193,1 195,80,239,136,1\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/1_24.jpg 51,92,109,13
4,1 70,139,133,187,1 136,103,191,146,1\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/1_25.jpg 42,80,93,134,1 169,
68,227,155,1\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/1_27.jpg 109,54,192,145,1\n', 'C:/Users/MadhuVasanth16
06/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/1_30.jpg 52,89,95,129,1 108,72,165,145,1\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/
Data/Source_Images/Training_Images/vott-csv-export/1_26.jpg 27,49,130,121,1 174,106,256,184,1\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Train
ing_Images/vott-csv-export/1_31.jpg 200,76,255,130,1 110,98,185,140,1\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-expo
rt/1_34.jpg 95,22,200,84,1 72,90,224,163,1 39,167,232,220,1\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/1_33.jp
g 98,44,236,184,1\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/1_38.jpg 52,20,238,202,1\n', 'C:/Users/MadhuVasan
th1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/1_32.jpg 37,24,258,187,1\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_
Images/Training_Images/vott-csv-export/1_39.jpg 50,44,266,210,1\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/ISI
C_0000001.jpg 261,180,836,607,3\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/ISIC_0000014.jpg 104,136,864,648,3
\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/ISIC_0000015.jpg 175,121,813,633,3\n', 'C:/Users/MadhuVasanth1606/D
esktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/ISIC_0000018_downsampled.jpg 107,114,909,610,3\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structur
e/Data/Source_Images/Training_Images/vott-csv-export/ISIC_0000021_downsampled.jpg 112,83,769,717,3\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/
Training_Images/vott-csv-export/ISIC_0025019.jpg 122,96,474,315,4\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/I
SIC_0025031.jpg 175,110,416,355,4\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/ISIC_0000024_downsampled.jpg 239,
```



```
Anaconda Prompt (Anaconda3) - python Train_YOLO.py                                                                                    —    □    ×

Images/Training_Images/vott-csv-export/1_39.jpg 50,44,266,210,1\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/ISI
C_0000001.jpg 261,180,836,607,3\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/ISIC_0000014.jpg 104,136,864,648,3\
n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/ISIC_0000015.jpg 175,121,813,633,3\n', 'C:/Users/MadhuVasanth1606/D
esktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/ISIC_0000018_downsampled.jpg 107,114,909,610,3\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structur
e/Data/Source_Images/Training_Images/vott-csv-export/ISIC_0000021_downsampled.jpg 112,83,769,717,3\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/
Training_Images/vott-csv-export/ISIC_0025019.jpg 122,96,474,315,4\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/I
SIC_0025031.jpg 175,110,416,355,4\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/ISIC_0000024_downsampled.jpg 239,
124,853,662,3\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/ISIC_0024949.jpg 73,165,409,427,4\n', 'C:/Users/Madhu
Vasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/ISIC_0025046.jpg 201,61,404,246,4 155,260,293,384,4\n', 'C:/Users/MadhuVasanth1606/Des
ktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/ISIC_0025856.jpg 262,124,513,353,4\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_
Images/Training_Images/vott-csv-export/ISIC_6653456.jpg 110,35,416,433,5\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-e
xport/ISIC_0025102.jpg 207,98,338,200,4 207,234,425,396,4 33,211,204,353,4\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv
-export/ISIC_6653780.jpg 157,142,351,340,5\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/ISIC_0025867.jpg 95,38,2
41,239,4 271,139,552,395,4\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/ISIC_6654875.jpg 78,42,406,411,5\n', 'C:
/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/ISIC_6656318.jpg 169,164,386,362,5\n', 'C:/Users/MadhuVasanth1606/Desktop/
yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/ISIC_6656373.jpg 145,120,378,357,5\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Image
s/Training_Images/vott-csv-export/ISIC_6656563.jpg 128,108,380,364,5\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-expor
t/ISIC_6657600.jpg 52,122,450,453,5\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/ISIC_6658067.jpg 193,174,339,35
1,5\n', 'C:/Users/MadhuVasanth1606/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/ISIC_6658892.jpg 151,71,421,423,5\n', 'C:/Users/MadhuVasanth160
6/Desktop/yolo_structure/Data/Source_Images/Training_Images/vott-csv-export/ISIC_6657660.jpg 133,149,316,282,5']
Train on 48 samples, val on 5 samples, with batch size 32.
Epoch 1/51
1/1 [==============================] - 89s 89s/step - loss: 9945.8770 - val_loss: 10232.3369
Epoch 2/51
```