

```
# This Python 3 environment comes with many helpful analytics libraries installed
# It is defined by the kaggle/python docker image: https://github.com/kaggle/docker-python
# For example, here's several helpful packages to load in
```

```
import numpy as np # linear algebra
import pandas as pd # data processing, CSV file I/O (e.g. pd.read_csv)
```

```
# Input data files are available in the "../input/" directory.
# For example, running this (by clicking run or pressing Shift+Enter) will list the files in the input directory
```

```
import os
print(os.listdir("../input"))
```

```
# Any results you write to the current directory are saved as output.
```

```
['imageairepo', 'google-ai-open-images-object-detection-track']
```

In [2]:

```
## Import the required libraries
```

```
from keras.preprocessing.image import ImageDataGenerator
from keras.applications.inception_v3 import preprocess_input
from keras.utils.data_utils import GeneratorEnqueueer
import matplotlib.pyplot as plt
import pandas as pd
import numpy as np
import math, os
```

```
%matplotlib inline
```

```
Using TensorFlow backend.
```

In [3]:

```
image_path = "../input/google-ai-open-images-object-detection-track/test/"
#image_path = "../input/test"
batch_size = 100
img_generator = ImageDataGenerator().flow_from_directory(image_path, shuffle=False,
, batch_size = batch_size)
n_rounds = math.ceil(img_generator.samples / img_generator.batch_size)
filenames = img_generator.filenames
```

```
img_generator = GeneratorEnqueueer(img_generator)
img_generator.start()
img_generator = img_generator.get()
```

```
Found 99999 images belonging to 1 classes.
```

In [4]:

```
!cp -r ../input/imageairepo/imageai/imageai imageai
```

In [5]:

```
vocab = {"/m/011k07": "Tortoise", "/m/011q46kg": "Container", "/m/012074": "Magpie",
, "/m/0120dh": "Sea turtle", "/m/01226z": "Football", "/m/012n7d": "Ambulance",
"/m/012w5l": "Ladder", "/m/012xff": "Toothbrush", "/m/012ysf": "Syringe", "/m/0130jx": "Sink",
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```

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```

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k5": "Helmet"}
rev = {}
for k,v in vocab.items():
    rev[v.lower()] = k

```

In [6]:

```
from imageai.Detection import ObjectDetection
model_weight_path = "../input/imageairepo/imageai/resnet50_v2.0.1.h5"
```

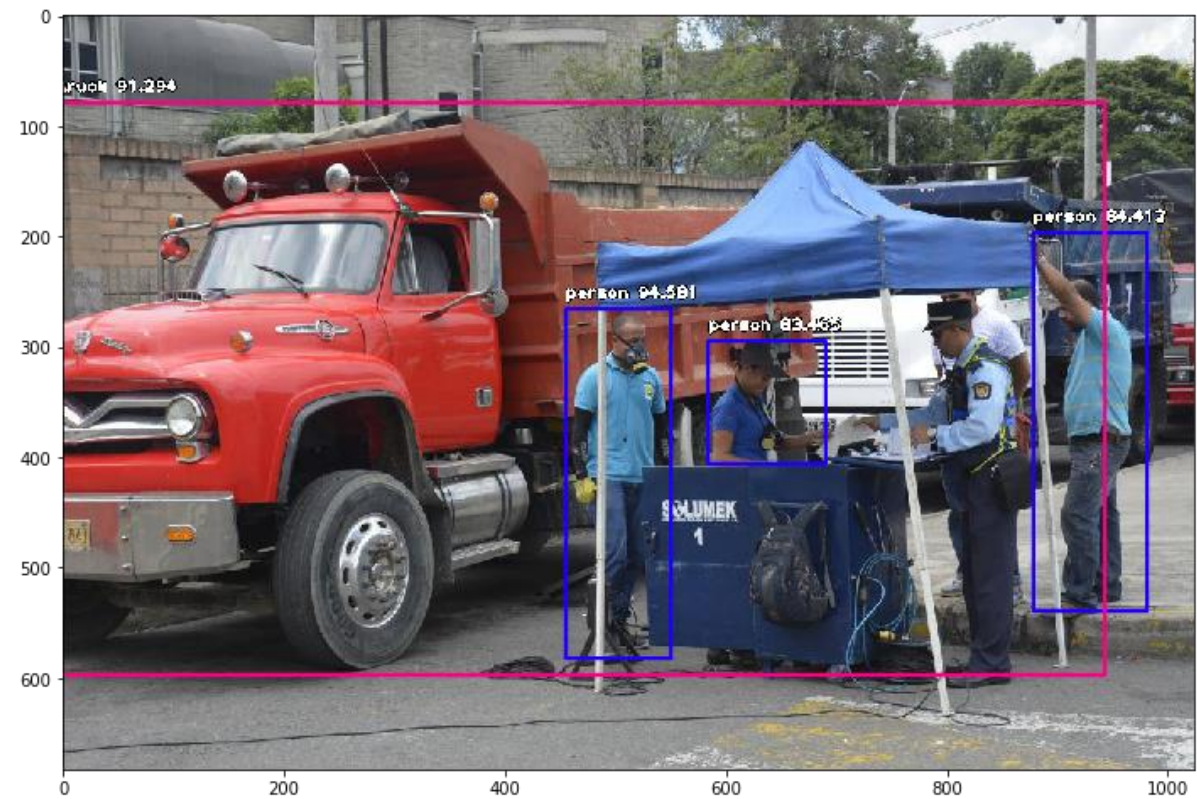
```
execution_path = os.getcwd()
detector = ObjectDetection()
detector.setModelTypeAsRetinaNet()
detector.setModelPath(model_weight_path)
detector.loadModel()
```

WARNING:tensorflow:From /opt/conda/lib/python3.6/site-packages/tensorflow/python/framework/op_def_library.py:263: colocate_with (from tensorflow.python.framework.ops) is deprecated and will be removed in a future version.
Instructions for updating:
Colocations handled automatically by placer.

In [7]:

```
for i in range(n_rounds):
    batch = next(img_generator)
    for j, prediction in enumerate(batch):
        image = filenames[i * batch_size + j]
        detections = detector.detectObjectsFromImage(input_image=image_path+image,
output_image_path="image_with_box.png", minimum_percentage_probability = 75)
        pred_str = ""
        labels = ""
        for eachObject in detections:
            if eachObject["name"] in rev:
                pred_str += rev[eachObject["name"]] + " " + str(float(eachObject["percentage_probability"])/100) + " 0.1 0.1 0.9 0.9"
                pred_str += " "
                labels += eachObject['name'] + ", " + str(round(float(eachObject['percentage_probability'])/100, 1))
                labels += " | "
        if labels != "":
            plt.figure(figsize=(12,12))
            plt.imshow(plt.imread("image_with_box.png"))
            plt.show()
            print ("Labels Detected: ")
            print (labels)
            print ()
            print ("Prediction String: ")
            print (pred_str)

    if i == 10:
        break
```

Labels Detected:

person, 0.8 | person, 0.8 | person, 0.9 | truck, 0.9 |

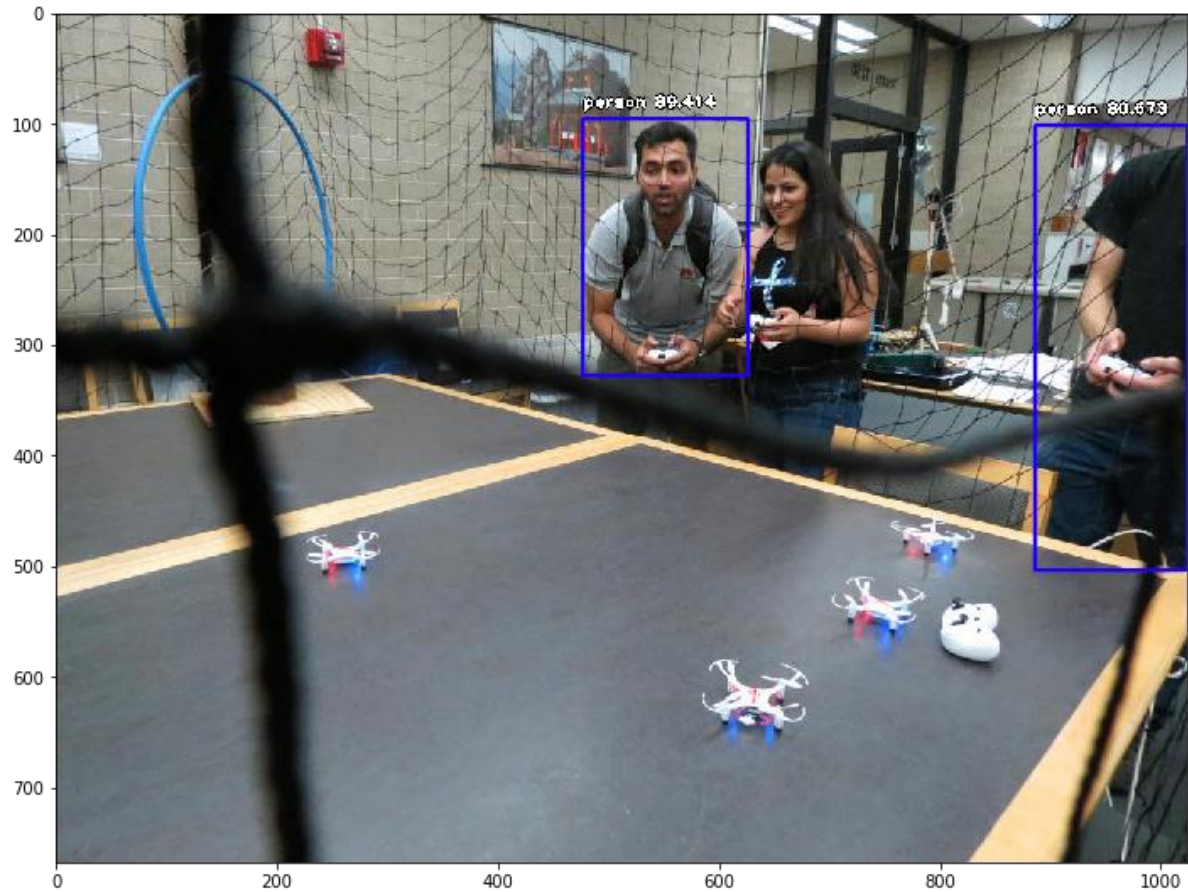
Prediction String:

/m/01g317 0.8346455097198486 0.1 0.1 0.9 0.9 /m/01g317 0.8441166877746582 0.1
 0.1 0.9 0.9 /m/01g317 0.945813775062561 0.1 0.1 0.9 0.9 /m/07r04 0.91293501853
 94287 0.1 0.1 0.9 0.9



Labels Detected:
person, 0.8 | person, 0.9 |

Prediction String:
/m/01g317 0.8299586772918701 0.1 0.1 0.9 0.9 /m/01g317 0.8990700244903564 0.1
0.1 0.9 0.9



Labels Detected:
person, 0.9 | person, 0.8 |

Prediction String:
/m/01g317 0.894140362739563 0.1 0.1 0.9 0.9 /m/01g317 0.8067294359207153 0.1 0
.1 0.9 0.9



Labels Detected:
boat, 0.9 |

Prediction String:
/m/019jd 0.8767012357711792 0.1 0.1 0.9 0.9



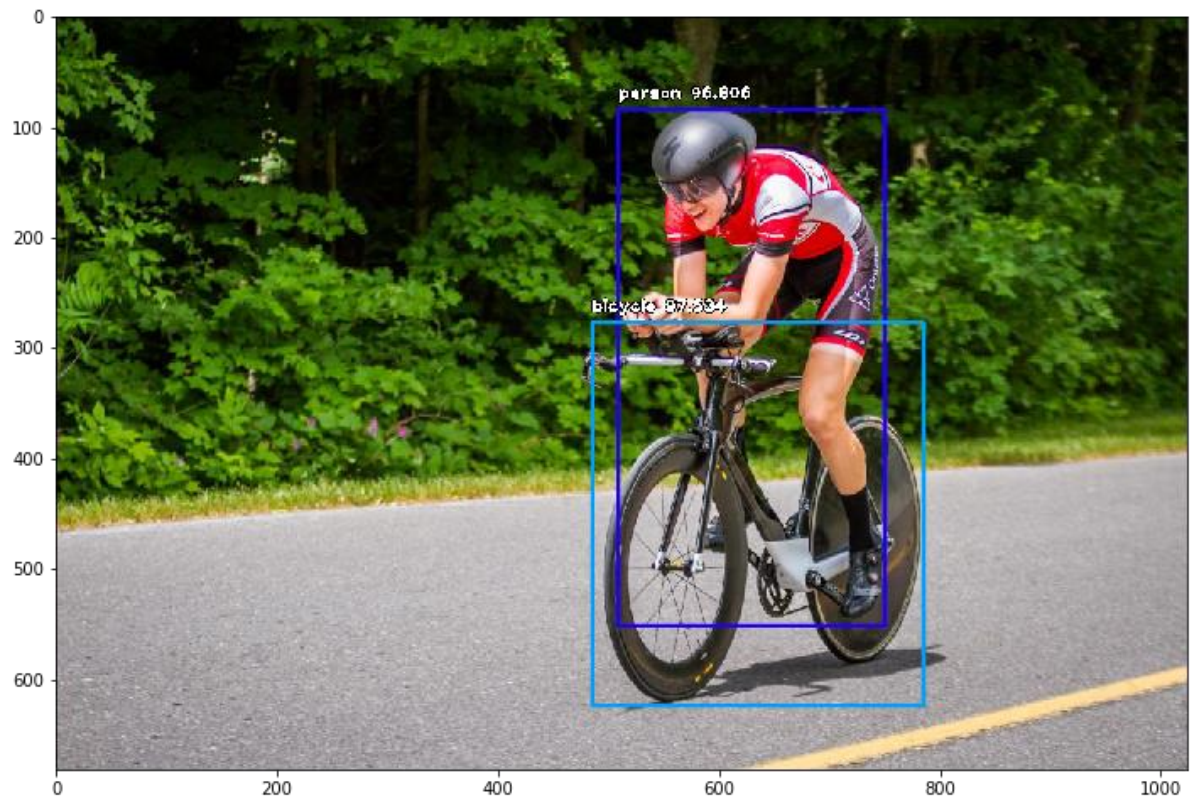
Labels Detected:
person, 0.8 | person, 0.8 | person, 0.9 |

Prediction String:
/m/01g317 0.7504554986953735 0.1 0.1 0.9 0.9 /m/01g317 0.7568102478981018 0.1
0.1 0.9 0.9 /m/01g317 0.8601909875869751 0.1 0.1 0.9 0.9



Labels Detected:
vase, 0.8 |

Prediction String:
/m/02s195 0.8401326537132263 0.1 0.1 0.9 0.9



Labels Detected:
 person, 1.0 | bicycle, 1.0 |

Prediction String:
 /m/01g317 0.9680647850036621 0.1 0.1 0.9 0.9 /m/0199g 0.9753354787826538 0.1 0
 .1 0.9 0.9

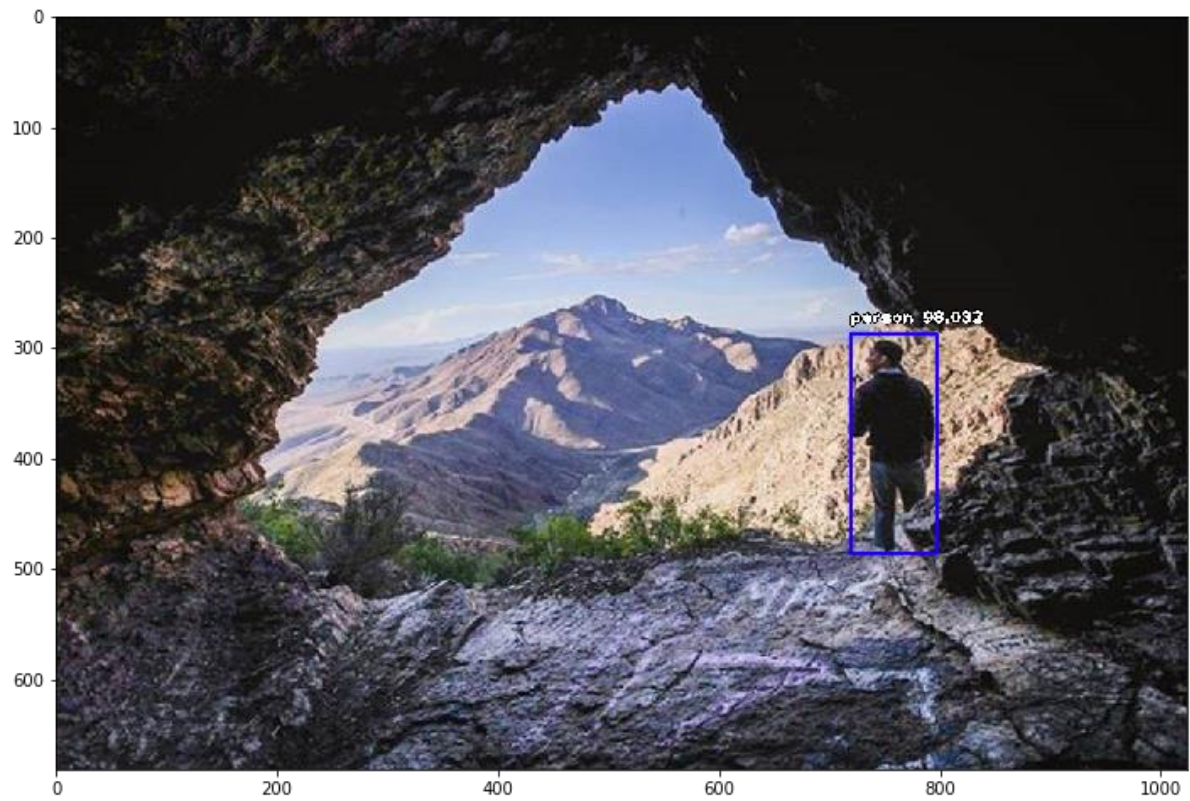


Labels Detected:

clock, 1.0 | person, 0.8 |

Prediction String:

/m/01x3z 0.9837026596069336 0.1 0.1 0.9 0.9 /m/01g317 0.7571382522583008 0.1 0.1 0.9 0.9



Labels Detected:

person, 1.0 |

Prediction String:

/m/01g317 0.9803228378295898 0.1 0.1 0.9 0.9

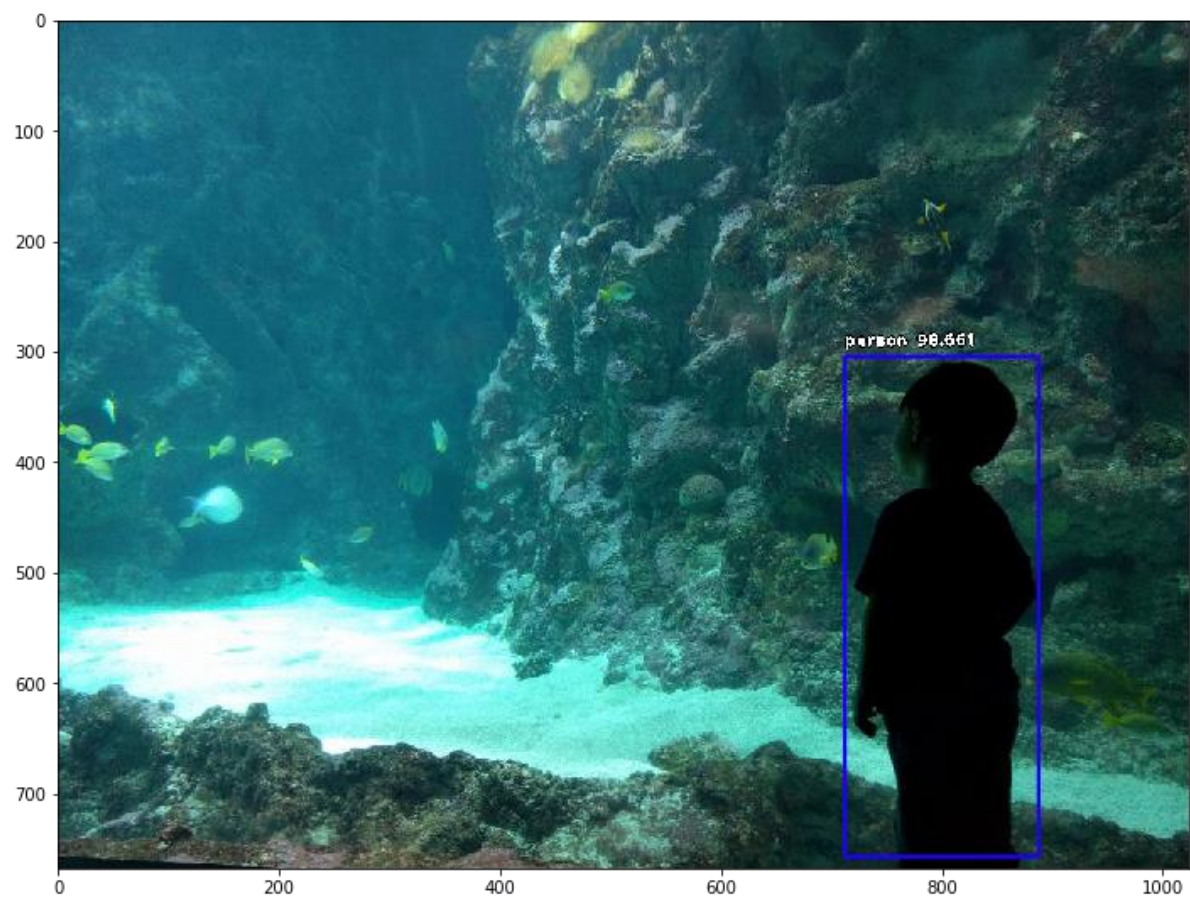


Labels Detected:

tie, 0.9 | person, 0.8 | person, 0.9 |

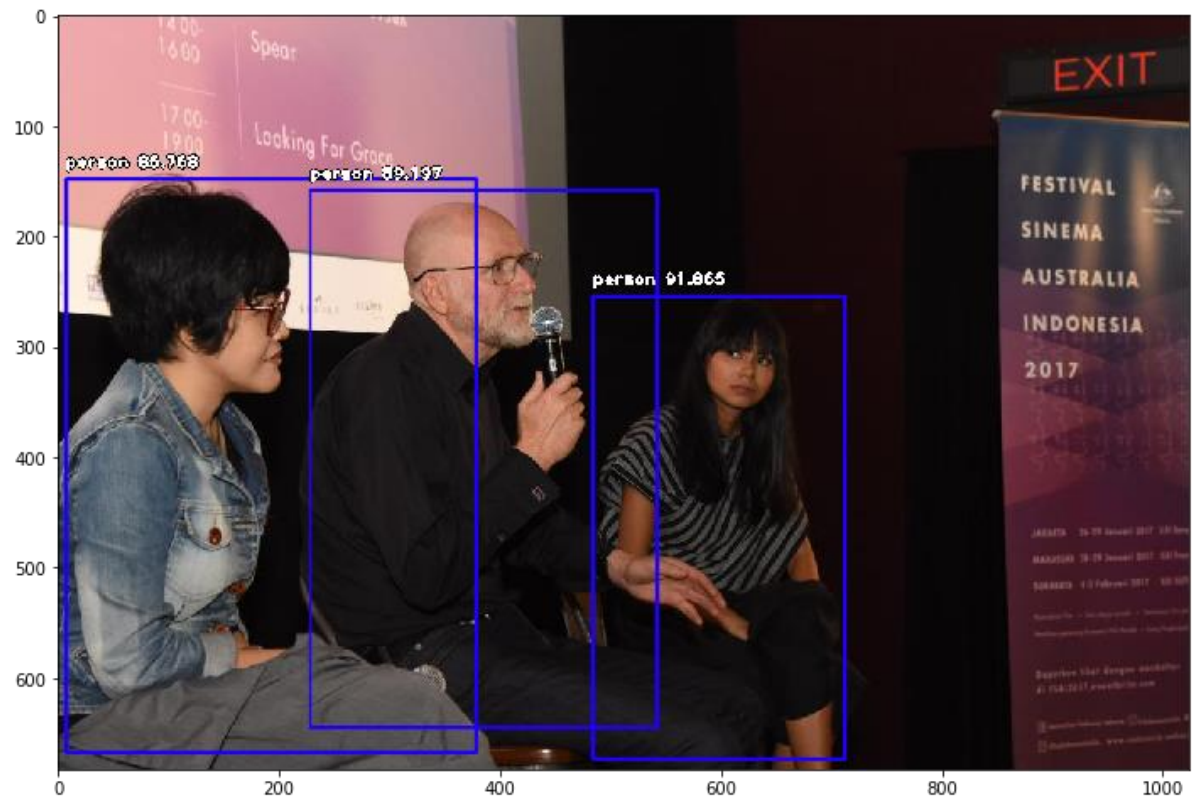
Prediction String:

/m/01rkbr 0.9423952102661133 0.1 0.1 0.9 0.9 /m/01g317 0.7953411340713501 0.1
0.1 0.9 0.9 /m/01g317 0.9445319175720215 0.1 0.1 0.9 0.9



Labels Detected:
person, 1.0 |

Prediction String:
/m/01g317 0.9866091012954712 0.1 0.1 0.9 0.9

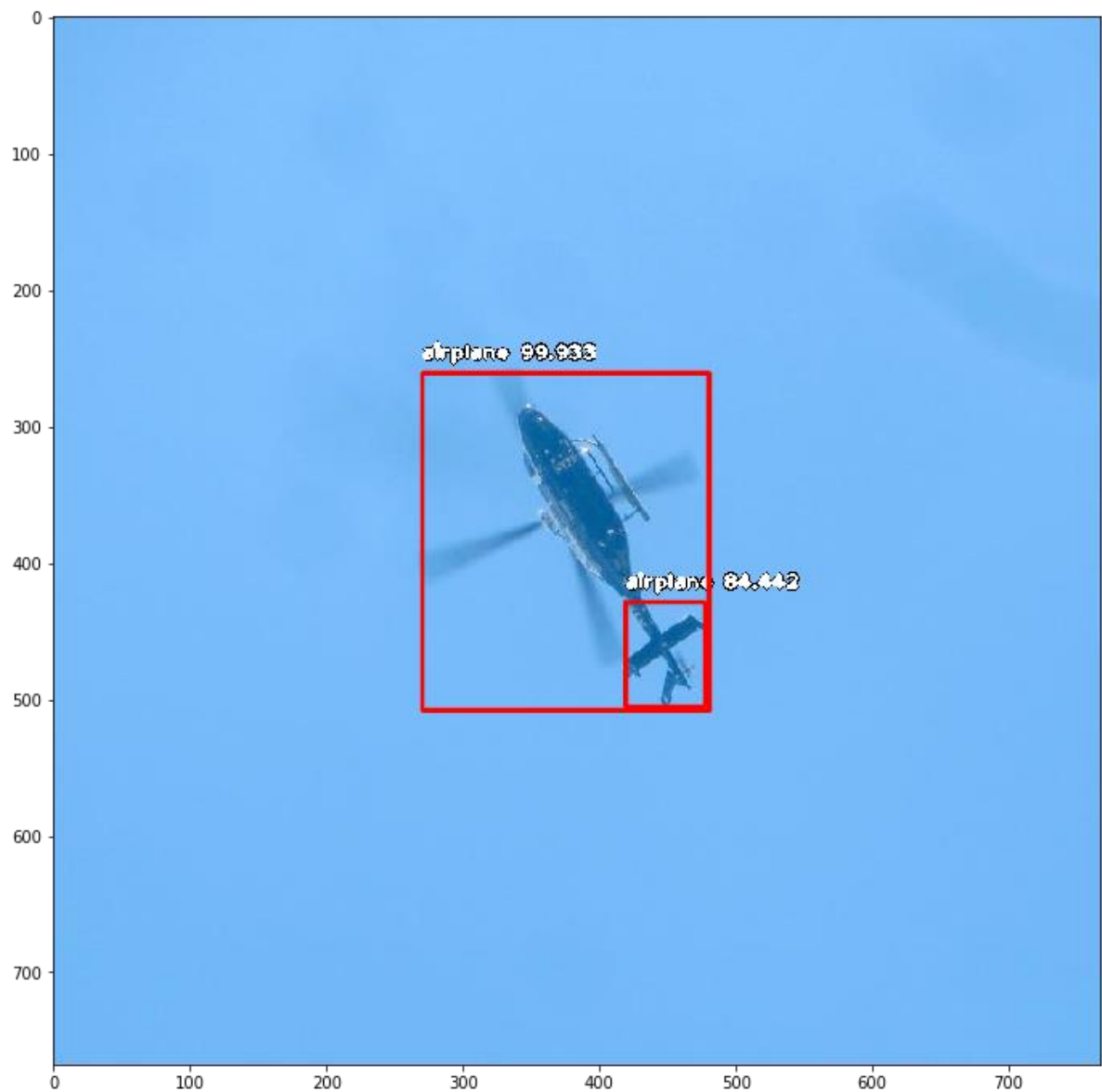


Labels Detected:

person, 0.9 | person, 0.9 | person, 0.9 |

Prediction String:

/m/01g317 0.9186490774154663 0.1 0.1 0.9 0.9 /m/01g317 0.8576849699020386 0.1
0.1 0.9 0.9 /m/01g317 0.8919657468795776 0.1 0.1 0.9 0.9



Labels Detected:

airplane, 0.8 | airplane, 1.0 |

Prediction String:

/m/0cmf2 0.8444231748580933 0.1 0.1 0.9 0.9 /m/0cmf2 0.9993276000022888 0.1 0.1 0.9 0.9