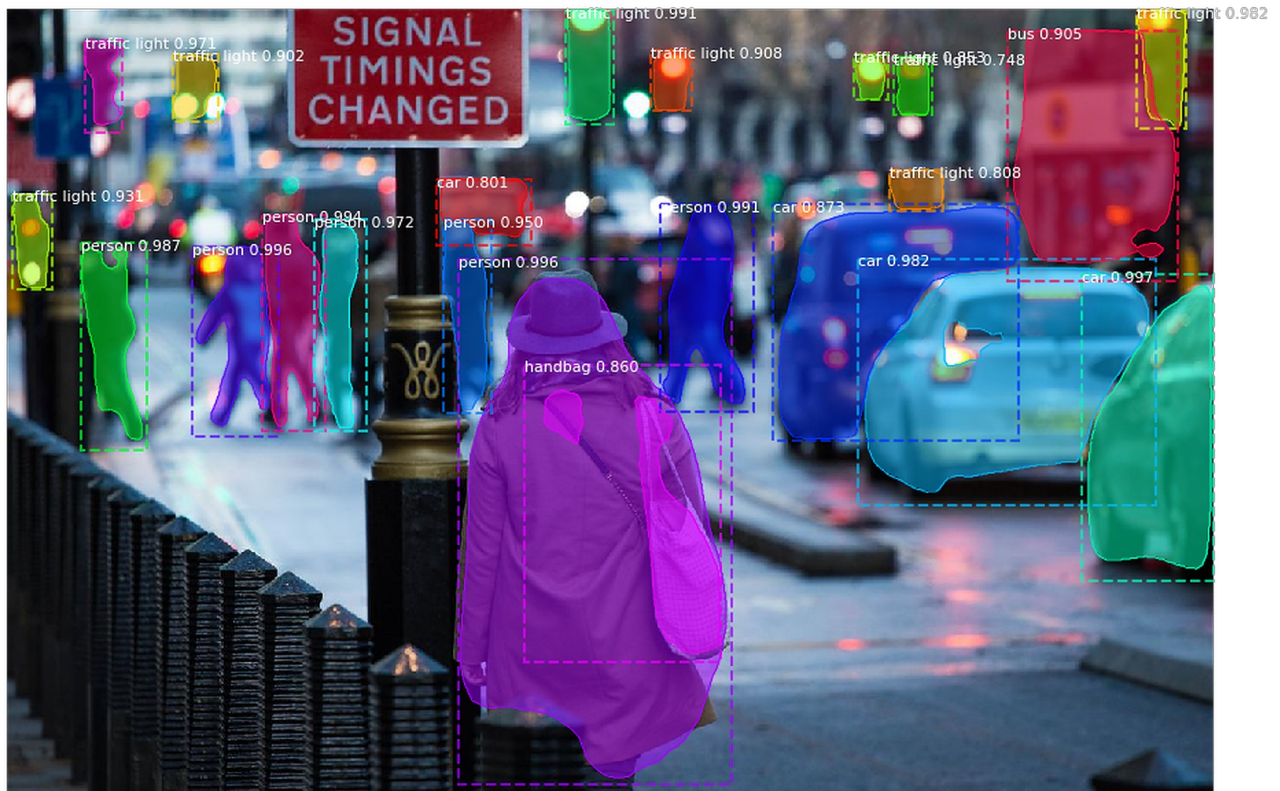


Instance Segmentation On Flickr_Data

In [2]:

```
from IPython.display import Image
Image(filename='im.png')
```

Out [2]:



Data description

Flicker8k_Dataset: Contains 8092 photographs in jpeg format.

In [0]:

```
import tensorflow as tf

device_name = tf.test.gpu_device_name()
if device_name != '/device:GPU:0':
    raise SystemError('GPU device not found')
print('Found GPU at: {}'.format(device_name))
```

The default version of TensorFlow in Colab will soon switch to TensorFlow 2.x.

We recommend you [upgrade](#) now or ensure your notebook will continue to use TensorFlow 1.x via the `%tensorflow_version 1.x` magic: [more info](#).

Found GPU at: /device:GPU:0

First, we will clone the mask rcnn repository which has the architecture for Mask R-CNN. Use the following command to clone the repository

In [0]:

```
!git clone https://github.com/matterport/Mask_RCNN
```

```
git clone https://github.com/matterport/mask_rcnn
```

```
Cloning into 'Mask_RCNN'...
remote: Enumerating objects: 956, done.
remote: Total 956 (delta 0), reused 0 (delta 0), pack-reused 956
Receiving objects: 100% (956/956), 111.83 MiB | 31.59 MiB/s, done.
Resolving deltas: 100% (569/569), done.
```

change the working directory to Mask_RCNN

In [0]:

```
import os
os.chdir('./Mask_RCNN')
```

download the data on which prediction is to be made(Flickr_data)

In [0]:

```
from google.colab import files
files.upload()
```

In [0]:

```
!mkdir -p ~/.kaggle
!cp kaggle.json ~/.kaggle/
```

In [0]:

```
!pip install -q kaggle
```

In [0]:

```
! kaggle datasets download -d shadabhussain/flickr8k
```

```
Warning: Your Kaggle API key is readable by other users on this system! To fix this, you can run '
chmod 600 /root/.kaggle/kaggle.json'
Downloading flickr8k.zip to /content/Mask_RCNN
 99% 2.11G/2.13G [00:13<00:00, 193MB/s]
100% 2.13G/2.13G [00:13<00:00, 167MB/s]
```

In [0]:

```
! unzip flickr8k.zip
```

In [0]:

```
!ls
```

```
assets Images MANIFEST.in README.md samples setup.py
images LICENSE mrcnn requirements.txt setup.cfg
```

import the required libraries and define the path for the pretrained weights and the images on which we would like to perform segmentation

In [0]:

```
import os
import sys
import random
import math
import numpy as np
import skimage.io
import matplotlib
import matplotlib.pyplot as plt
```

```

from mrcnn import utils
from samples.coco import coco
import mrcnn.model as modellib
from mrcnn import visualize

%matplotlib inline

# Root directory of the project
ROOT_DIR = os.getcwd()

# Directory to save logs and trained model
MODEL_DIR = os.path.join(ROOT_DIR, "logs")

# Local path to trained weights file
COCO_MODEL_PATH = os.path.join(ROOT_DIR, "mask_rcnn_coco.h5")
# Download COCO trained weights from Releases if needed
if not os.path.exists(COCO_MODEL_PATH):
    utils.download_trained_weights(COCO_MODEL_PATH)

# Directory of images to run detection on
IMAGE_DIR = os.path.join(ROOT_DIR, "Images")

```

Using TensorFlow backend.

Downloading pretrained model to /content/Mask_RCNN/mask_rcnn_coco.h5 ...
... done downloading pretrained model!

Create an inference class which will be used to infer the Mask R-CNN model

In [0]:

```

class InferenceConfig(coco.CocoConfig):
    """
    Set batch size to 1 since we'll be running inference on
    one image at a time. Batch size = GPU_COUNT * IMAGES_PER_GPU
    """
    GPU_COUNT = 1
    IMAGES_PER_GPU = 1

config = InferenceConfig()
config.display()

```

Configurations:

```

BACKBONE                resnet101
BACKBONE_STRIDES         [4, 8, 16, 32, 64]
BATCH_SIZE               1
BBOX_STD_DEV             [0.1 0.1 0.2 0.2]
COMPUTE_BACKBONE_SHAPE   None
DETECTION_MAX_INSTANCES  100
DETECTION_MIN_CONFIDENCE 0.7
DETECTION_NMS_THRESHOLD  0.3
FPN_CLASSIF_FC_LAYERS_SIZE 1024
GPU_COUNT                1
GRADIENT_CLIP_NORM       5.0
IMAGES_PER_GPU           1
IMAGE_CHANNEL_COUNT       3
IMAGE_MAX_DIM            1024
IMAGE_META_SIZE          93
IMAGE_MIN_DIM            800
IMAGE_MIN_SCALE          0
IMAGE_RESIZE_MODE         square
IMAGE_SHAPE              [1024 1024    3]
LEARNING_MOMENTUM         0.9
LEARNING_RATE            0.001
LOSS_WEIGHTS              {'rpn_class_loss': 1.0, 'rpn_bbox_loss': 1.0, 'mrcnn_class_loss': 1.0, 'mrcnn_bbox_loss': 1.0, 'mrcnn_mask_loss': 1.0}
MASK_POOL_SIZE           14
MASK_SHAPE               [28, 28]
MAX_GT_INSTANCES         100
MEAN_PIXEL               [123.7 116.8 103.9]
MINI_MASK_SHAPE          (56, 56)
NAME                     coco

```

NUM_CLASSES	81
POOL_SIZE	7
POST_NMS_ROIS_INFERENCE	1000
POST_NMS_ROIS_TRAINING	2000
PRE_NMS_LIMIT	6000
ROI_POSITIVE_RATIO	0.33
RPN_ANCHOR_RATIOS	[0.5, 1, 2]
RPN_ANCHOR_SCALES	(32, 64, 128, 256, 512)
RPN_ANCHOR_STRIDE	1
RPN_BBOX_STD_DEV	[0.1 0.1 0.2 0.2]
RPN_NMS_THRESHOLD	0.7
RPN_TRAIN_ANCHORS_PER_IMAGE	256
STEPS_PER_EPOCH	1000
TOP_DOWN_PYRAMID_SIZE	256
TRAIN_BN	False
TRAIN_ROIS_PER_IMAGE	200
USE_MINI_MASK	True
USE_RPN_ROIS	True
VALIDATION_STEPS	50
WEIGHT_DECAY	0.0001



Next, we will create our model and load the pretrained weights which we downloaded earlier

In [0]:

```
""" Create model object in inference mode """

model = modellib.MaskRCNN(mode="inference", model_dir=MODEL_DIR, config=config)

model.load_weights(COCO_MODEL_PATH, by_name=True)
```

define the classes of the COCO dataset which will help us in the prediction phase:

In [0]:

```
# COCO Class names
"""
Index of the class in the list is its ID. For example, to get ID of
the car class, use: class_names.index('car')
"""

class_names = ['BG', 'person', 'bicycle', 'car', 'motorcycle', 'airplane',
               'bus', 'train', 'truck', 'boat', 'traffic light',
               'fire hydrant', 'stop sign', 'parking meter', 'bench', 'bird',
               'cat', 'dog', 'horse', 'sheep', 'cow', 'elephant', 'bear',
               'zebra', 'giraffe', 'backpack', 'umbrella', 'handbag', 'tie',
               'suitcase', 'frisbee', 'skis', 'snowboard', 'sports ball',
               'kite', 'baseball bat', 'baseball glove', 'skateboard',
               'surfboard', 'tennis racket', 'bottle', 'wine glass', 'cup',
               'fork', 'knife', 'spoon', 'bowl', 'banana', 'apple',
               'sandwich', 'orange', 'broccoli', 'carrot', 'hot dog', 'pizza',
               'donut', 'cake', 'chair', 'couch', 'potted plant', 'bed',
               'dining table', 'toilet', 'tv', 'laptop', 'mouse', 'remote',
               'keyboard', 'cell phone', 'microwave', 'oven', 'toaster',
               'sink', 'refrigerator', 'book', 'clock', 'vase', 'scissors',
               'teddy bear', 'hair drier', 'toothbrush']
```

We will use the Mask R-CNN model along with the pretrained weights and see how well it segments the object.

In [0]:

```
#Load a random image from the images folder
file_names = next(os.walk(IMAGE_DIR))[2]
image = skimage.io.imread(os.path.join(IMAGE_DIR, random.choice(file_names)))

# Run detection
results = model.detect([image], verbose=1)

"""
model.detect function is used
```

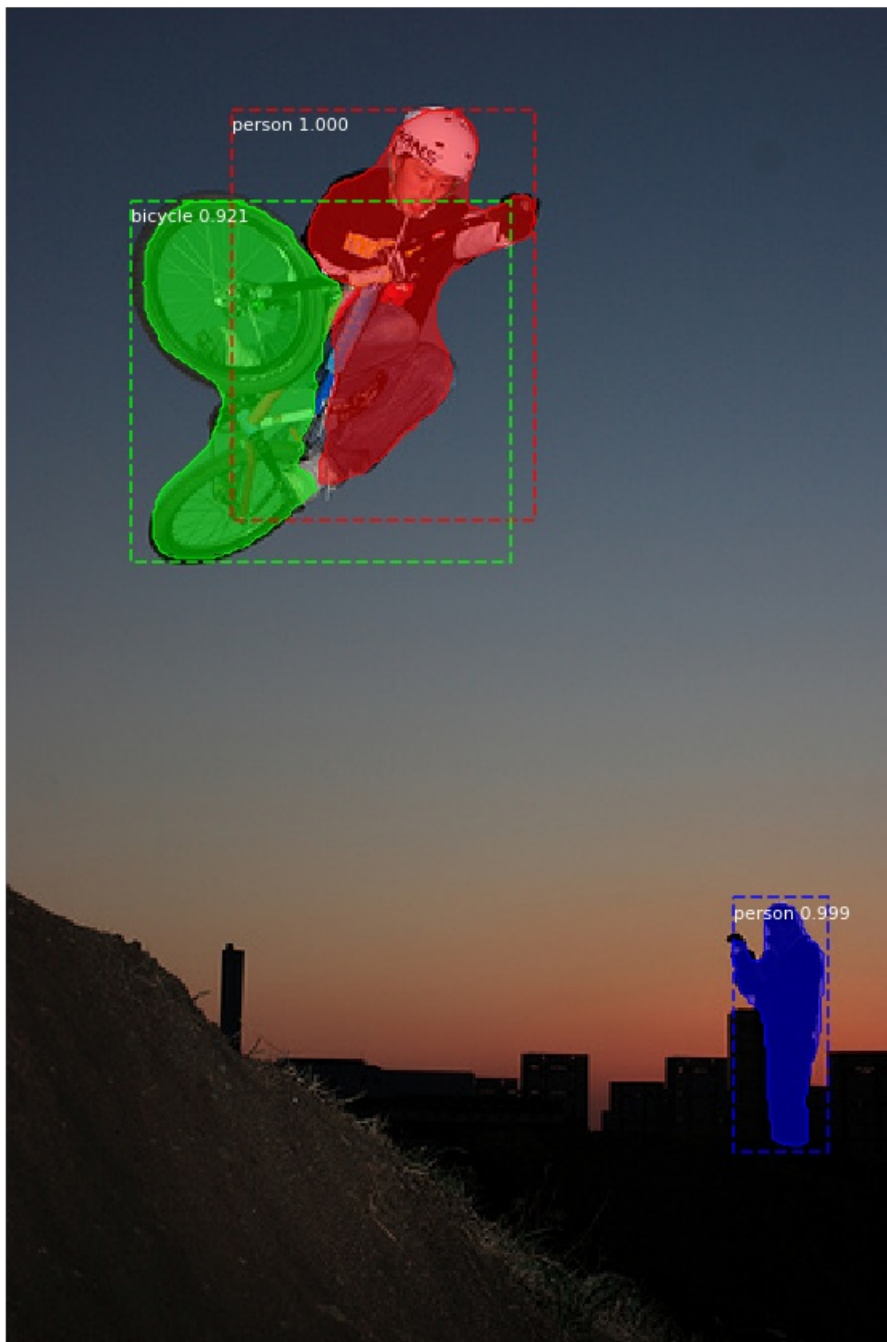
```
to detect the class labels in the images
"""
```

```
# Visualize results
```

```
r = results[0]
visualize.display_instances(image, r['rois'], r['masks'], r['class_ids'],
                           class_names, r['scores'])
```

Processing 1 images

image	shape: (500, 333, 3)	min: 0.00000	max: 255.00000	uint8
molded_images	shape: (1, 1024, 1024, 3)	min: -123.70000	max: 150.10000	float64
image metas	shape: (1, 93)	min: 0.00000	max: 1024.00000	float64
anchors	shape: (1, 261888, 4)	min: -0.35390	max: 1.29134	float32



In [0]:

```
file_names = next(os.walk(IMAGE_DIR))[2]
image = skimage.io.imread(os.path.join(IMAGE_DIR, '1000268201_693b08cb0e.jpg'))

# Run detection
results = model.detect([image], verbose=1)
```



```
# Visualize results
r = results[0]
visualize.display_instances(image, r['rois'], r['masks'], r['class_ids'],
                           class_names, r['scores'])
```

Processing 1 images

image	shape: (500, 375, 3)	min: 0.00000	max: 255.00000	uint8
molded_images	shape: (1, 1024, 1024, 3)	min: -123.70000	max: 151.10000	float64
image metas	shape: (1, 93)	min: 0.00000	max: 1024.00000	float64
anchors	shape: (1, 261888, 4)	min: -0.35390	max: 1.29134	float32



In [0]:

```
# Load a random image from the images folder
file_names = next(os.walk(IMAGE_DIR))[2]
image = skimage.io.imread(os.path.join(IMAGE_DIR, random.choice(file_names)))

# Run detection
results = model.detect([image], verbose=1)

# Visualize results
r = results[0]
```



```
visualize.display_instances(image, r['rois'], r['masks'], r['class_ids'],  
                           class_names, r['scores'])
```

Processing 1 images

image	shape: (500, 400, 3)	min: 0.00000	max: 255.00000	uint8
molded_images	shape: (1, 1024, 1024, 3)	min: -123.70000	max: 151.10000	float64
image metas	shape: (1, 93)	min: 0.00000	max: 1024.00000	float64
anchors	shape: (1, 261888, 4)	min: -0.35390	max: 1.29134	float32



In [0]:

```
#make the videos directory  
!mkdir videos
```

make the movie out of the images present in the flickr_data

In [0]:

```
#https://gist.github.com/ch3110v3k/c3a2e3827bae83f9a79421d6abba7458  
import sys
```

```

import cv2
from PIL import Image

video_name = 'videos/Video.mp4'
image_folder = 'Images'
fps = 10

def generate_video():

    # os.chdir( global_path );

    images = [img for img in os.listdir(image_folder)
               if img.endswith(".jpg") or
               img.endswith(".jpeg") or
               img.endswith("png")]

    # exit();

    images.sort();
    # print(images);

    frame = cv2.imread(os.path.join(image_folder, images[0]))

    # setting the frame width, height width
    # the width, height of first image
    height, width, layers = frame.shape

    video = cv2.VideoWriter(video_name, 0, fps, (width, height));

    # Appending the images to the video one by one
    for image in images:
        video.write(cv2.imread(os.path.join(image_folder, image)))

    # Deallocating memories taken for window creation
    cv2.destroyAllWindows()
    video.release() # releasing the video generated
    print(' Done ...');

# Calling the generate_video function
generate_video()

```

Done ...

In [0]:

```
!ls ./videos
```

videos.mp4

now from the movie,take 3 images at the time and make prediction on it and save it the desired folder.

In [0]:

```

import cv2
import numpy as np

def random_colors(N):
    np.random.seed(1)
    colors = [tuple(255 * np.random.rand(3)) for _ in range(N)]
    return colors

def apply_mask(image, mask, color, alpha=0.5):
    """apply mask to image"""
    for n, c in enumerate(color):
        image[:, :, n] = np.where(
            mask == 1,
            image[:, :, n] * (1 - alpha) + alpha * c,
            image[:, :, n]
        )
    return image

```



```

def display_instances(image, boxes, masks, ids, names, scores):
    """
        take the image and results and apply the mask, box, and Label
    """
    n_instances = boxes.shape[0]
    colors = random_colors(n_instances)

    if not n_instances:
        print('NO INSTANCES TO DISPLAY')
    else:
        assert boxes.shape[0] == masks.shape[-1] == ids.shape[0]

    for i, color in enumerate(colors):
        if not np.any(boxes[i]):
            continue

        y1, x1, y2, x2 = boxes[i]
        label = names[ids[i]]
        score = scores[i] if scores is not None else None
        caption = '{} {:.2f}'.format(label, score) if score else label
        mask = masks[:, :, i]

        image = apply_mask(image, mask, color)
        image = cv2.rectangle(image, (x1, y1), (x2, y2), color, 2)
        image = cv2.putText(
            image, caption, (x1, y1), cv2.FONT_HERSHEY_COMPLEX, 0.7, color, 2
        )

    return image

if __name__ == '__main__':
    """
        test everything
    """

    # We use a K80 GPU with 24GB memory, which can fit 3 images.
    batch_size = 3

    ROOT_DIR = os.getcwd()
    MODEL_DIR = os.path.join(ROOT_DIR, "logs")
    VIDEO_DIR = os.path.join(ROOT_DIR, "videos")
    VIDEO_SAVE_DIR = os.path.join(VIDEO_DIR, "save")
    COCO_MODEL_PATH = os.path.join(ROOT_DIR, "mask_rcnn_coco.h5")
    if not os.path.exists(COCO_MODEL_PATH):
        utils.download_trained_weights(COCO_MODEL_PATH)

    class InferenceConfig(coco.CocoConfig):
        GPU_COUNT = 1
        IMAGES_PER_GPU = batch_size

    config = InferenceConfig()
    config.display()

    model = modellib.MaskRCNN(
        mode="inference", model_dir=MODEL_DIR, config=config
    )
    model.load_weights(COCO_MODEL_PATH, by_name=True)
    class_names = [
        'BG', 'person', 'bicycle', 'car', 'motorcycle', 'airplane',
        'bus', 'train', 'truck', 'boat', 'traffic light',
        'fire hydrant', 'stop sign', 'parking meter', 'bench', 'bird',
        'cat', 'dog', 'horse', 'sheep', 'cow', 'elephant', 'bear',
        'zebra', 'giraffe', 'backpack', 'umbrella', 'handbag', 'tie',
        'suitcase', 'frisbee', 'skis', 'snowboard', 'sports ball',
        'kite', 'baseball bat', 'baseball glove', 'skateboard',
        'surfboard', 'tennis racket', 'bottle', 'wine glass', 'cup',
        'fork', 'knife', 'spoon', 'bowl', 'banana', 'apple',
        'sandwich', 'orange', 'broccoli', 'carrot', 'hot dog', 'pizza',
        'donut', 'cake', 'chair', 'couch', 'potted plant', 'bed',
        'dining table', 'toilet', 'tv', 'laptop', 'mouse', 'remote',
        'keyboard', 'cell phone', 'microwave', 'oven', 'toaster',
        'sink', 'refrigerator', 'book', 'clock', 'vase', 'scissors',
        'teddy bear', 'hair drier', 'toothbrush'
    ]

```

```

]

capture = cv2.VideoCapture(os.path.join(VIDEO_DIR, 'videos.mp4'))
try:
    if not os.path.exists(VIDEO_SAVE_DIR):
        os.makedirs(VIDEO_SAVE_DIR)
except OSError:
    print ('Error: Creating directory of data')
frames = []
frame_count = 0
# these 2 lines can be removed if you dont have a 1080p camera.
capture.set(cv2.CAP_PROP_FRAME_WIDTH, 1920)
capture.set(cv2.CAP_PROP_FRAME_HEIGHT, 1080)

while True:
    ret, frame = capture.read()
    # Bail out when the video file ends
    if not ret:
        break

    # Save each frame of the video to a list
    frame_count += 1
    frames.append(frame)
    print('frame_count :{0}'.format(frame_count))
    if len(frames) == batch_size:
        results = model.detect(frames, verbose=0)
        print('Predicted')
        for i, item in enumerate(zip(frames, results)):
            frame = item[0]
            r = item[1]
            frame = display_instances(
                frame, r['rois'], r['masks'], r['class_ids'], class_names, r['scores']
            )
            name = '{0}.jpg'.format(frame_count + i - batch_size)
            name = os.path.join(VIDEO_SAVE_DIR, name)
            cv2.imwrite(name, frame)
            print('writing to file:{0}'.format(name))
        # Clear the frames array to start the next batch
        frames = []

capture.release()

```

Configurations:

BACKBONE	resnet101
BACKBONE_STRIDES	[4, 8, 16, 32, 64]
BATCH_SIZE	3
BBOX_STD_DEV	[0.1 0.1 0.2 0.2]
COMPUTE_BACKBONE_SHAPE	None
DETECTION_MAX_INSTANCES	100
DETECTION_MIN_CONFIDENCE	0.7
DETECTION_NMS_THRESHOLD	0.3
FPN_CLASSIF_FC_LAYERS_SIZE	1024
GPU_COUNT	1
GRADIENT_CLIP_NORM	5.0
IMAGES_PER_GPU	3
IMAGE_CHANNEL_COUNT	3
IMAGE_MAX_DIM	1024
IMAGE_META_SIZE	93
IMAGE_MIN_DIM	800
IMAGE_MIN_SCALE	0
IMAGE_RESIZE_MODE	square
IMAGE_SHAPE	[1024 1024 3]
LEARNING_MOMENTUM	0.9
LEARNING_RATE	0.001
LOSS_WEIGHTS	{'rpn_class_loss': 1.0, 'rpn_bbox_loss': 1.0, 'mrcnn_class_loss': 1.0, 'mrcnn_bbox_loss': 1.0, 'mrcnn_mask_loss': 1.0}
MASK_POOL_SIZE	14
MASK_SHAPE	[28, 28]
MAX_GT_INSTANCES	100
MEAN_PIXEL	[123.7 116.8 103.9]
MINI_MASK_SHAPE	(56, 56)
NAME	coco
NUM_CLASSES	81
POOL_SIZE	7
POST_NMS_ROIS_INFERENCE	1000
POST_NMS_ROIS_TRAINING	2000
PRE_NMS_TOPK	6000

```
RPN_NMS_THRESH 0.0000
ROI_POSITIVE_RATIO 0.33
RPN_ANCHOR_RATIOS [0.5, 1, 2]
RPN_ANCHOR_SCALES (32, 64, 128, 256, 512)
RPN_ANCHOR_STRIDE 1
RPN_BBOX_STD_DEV [0.1 0.1 0.2 0.2]
RPN_NMS_THRESHOLD 0.7
RPN_TRAIN_ANCHORS_PER_IMAGE 256
STEPS_PER_EPOCH 1000
TOP_DOWN_PYRAMID_SIZE 256
TRAIN_BN False
TRAIN_ROIS_PER_IMAGE 200
USE_MINI_MASK True
USE_RPN_ROIS True
VALIDATION_STEPS 50
WEIGHT_DECAY 0.0001
```

```
frame_count :1
frame_count :2
frame_count :3
Predicted
writing to file:/content/Mask_RCNN/videos/save/0.jpg
writing to file:/content/Mask_RCNN/videos/save/1.jpg
writing to file:/content/Mask_RCNN/videos/save/2.jpg
frame_count :4
frame_count :5
frame_count :6
Predicted
writing to file:/content/Mask_RCNN/videos/save/3.jpg
writing to file:/content/Mask_RCNN/videos/save/4.jpg
writing to file:/content/Mask_RCNN/videos/save/5.jpg
frame_count :7
frame_count :8
frame_count :9
Predicted
writing to file:/content/Mask_RCNN/videos/save/6.jpg
writing to file:/content/Mask_RCNN/videos/save/7.jpg
writing to file:/content/Mask_RCNN/videos/save/8.jpg
frame_count :10
frame_count :11
frame_count :12
Predicted
writing to file:/content/Mask_RCNN/videos/save/9.jpg
writing to file:/content/Mask_RCNN/videos/save/10.jpg
writing to file:/content/Mask_RCNN/videos/save/11.jpg
frame_count :13
frame_count :14
frame_count :15
Predicted
writing to file:/content/Mask_RCNN/videos/save/12.jpg
writing to file:/content/Mask_RCNN/videos/save/13.jpg
writing to file:/content/Mask_RCNN/videos/save/14.jpg
frame_count :16
frame_count :17
frame_count :18
Predicted
writing to file:/content/Mask_RCNN/videos/save/15.jpg
writing to file:/content/Mask_RCNN/videos/save/16.jpg
writing to file:/content/Mask_RCNN/videos/save/17.jpg
frame_count :19
frame_count :20
frame_count :21
Predicted
writing to file:/content/Mask_RCNN/videos/save/18.jpg
writing to file:/content/Mask_RCNN/videos/save/19.jpg
writing to file:/content/Mask_RCNN/videos/save/20.jpg
frame_count :22
frame_count :23
frame_count :24
Predicted
writing to file:/content/Mask_RCNN/videos/save/21.jpg
writing to file:/content/Mask_RCNN/videos/save/22.jpg
writing to file:/content/Mask_RCNN/videos/save/23.jpg
frame_count :25
frame_count :26
frame_count :27
Predicted
```

```
Predicted
writing to file:/content/Mask_RCNN/videos/save/24.jpg
writing to file:/content/Mask_RCNN/videos/save/25.jpg
writing to file:/content/Mask_RCNN/videos/save/26.jpg
frame_count :28
frame_count :29
frame_count :30
Predicted
writing to file:/content/Mask_RCNN/videos/save/27.jpg
writing to file:/content/Mask_RCNN/videos/save/28.jpg
writing to file:/content/Mask_RCNN/videos/save/29.jpg
frame_count :31
frame_count :32
frame_count :33
Predicted
writing to file:/content/Mask_RCNN/videos/save/30.jpg
writing to file:/content/Mask_RCNN/videos/save/31.jpg
writing to file:/content/Mask_RCNN/videos/save/32.jpg
frame_count :34
frame_count :35
frame_count :36
Predicted
writing to file:/content/Mask_RCNN/videos/save/33.jpg
writing to file:/content/Mask_RCNN/videos/save/34.jpg
writing to file:/content/Mask_RCNN/videos/save/35.jpg
frame_count :37
frame_count :38
frame_count :39
Predicted
writing to file:/content/Mask_RCNN/videos/save/36.jpg
writing to file:/content/Mask_RCNN/videos/save/37.jpg
writing to file:/content/Mask_RCNN/videos/save/38.jpg
frame_count :40
frame_count :41
frame_count :42
Predicted
writing to file:/content/Mask_RCNN/videos/save/39.jpg
writing to file:/content/Mask_RCNN/videos/save/40.jpg
writing to file:/content/Mask_RCNN/videos/save/41.jpg
frame_count :43
frame_count :44
frame_count :45
Predicted
writing to file:/content/Mask_RCNN/videos/save/42.jpg
writing to file:/content/Mask_RCNN/videos/save/43.jpg
writing to file:/content/Mask_RCNN/videos/save/44.jpg
frame_count :46
frame_count :47
frame_count :48
Predicted
NO INSTANCES TO DISPLAY
writing to file:/content/Mask_RCNN/videos/save/45.jpg
writing to file:/content/Mask_RCNN/videos/save/46.jpg
writing to file:/content/Mask_RCNN/videos/save/47.jpg
frame_count :49
frame_count :50
frame_count :51
Predicted
writing to file:/content/Mask_RCNN/videos/save/48.jpg
writing to file:/content/Mask_RCNN/videos/save/49.jpg
writing to file:/content/Mask_RCNN/videos/save/50.jpg
frame_count :52
frame_count :53
frame_count :54
Predicted
writing to file:/content/Mask_RCNN/videos/save/51.jpg
writing to file:/content/Mask_RCNN/videos/save/52.jpg
writing to file:/content/Mask_RCNN/videos/save/53.jpg
frame_count :55
frame_count :56
frame_count :57
Predicted
writing to file:/content/Mask_RCNN/videos/save/54.jpg
writing to file:/content/Mask_RCNN/videos/save/55.jpg
writing to file:/content/Mask_RCNN/videos/save/56.jpg
frame_count :58
frame_count :59
frame_count :60
```



```
frame_count :60
Predicted
writing to file:/content/Mask_RCNN/videos/save/57.jpg
writing to file:/content/Mask_RCNN/videos/save/58.jpg
writing to file:/content/Mask_RCNN/videos/save/59.jpg
frame_count :61
frame_count :62
frame_count :63
Predicted
writing to file:/content/Mask_RCNN/videos/save/60.jpg
writing to file:/content/Mask_RCNN/videos/save/61.jpg
writing to file:/content/Mask_RCNN/videos/save/62.jpg
frame_count :64
frame_count :65
frame_count :66
Predicted
writing to file:/content/Mask_RCNN/videos/save/63.jpg
writing to file:/content/Mask_RCNN/videos/save/64.jpg
writing to file:/content/Mask_RCNN/videos/save/65.jpg
frame_count :67
frame_count :68
frame_count :69
Predicted
writing to file:/content/Mask_RCNN/videos/save/66.jpg
writing to file:/content/Mask_RCNN/videos/save/67.jpg
writing to file:/content/Mask_RCNN/videos/save/68.jpg
frame_count :70
frame_count :71
frame_count :72
Predicted
writing to file:/content/Mask_RCNN/videos/save/69.jpg
writing to file:/content/Mask_RCNN/videos/save/70.jpg
writing to file:/content/Mask_RCNN/videos/save/71.jpg
frame_count :73
frame_count :74
frame_count :75
Predicted
writing to file:/content/Mask_RCNN/videos/save/72.jpg
writing to file:/content/Mask_RCNN/videos/save/73.jpg
writing to file:/content/Mask_RCNN/videos/save/74.jpg
frame_count :76
frame_count :77
frame_count :78
Predicted
writing to file:/content/Mask_RCNN/videos/save/75.jpg
writing to file:/content/Mask_RCNN/videos/save/76.jpg
writing to file:/content/Mask_RCNN/videos/save/77.jpg
frame_count :79
frame_count :80
frame_count :81
Predicted
writing to file:/content/Mask_RCNN/videos/save/78.jpg
writing to file:/content/Mask_RCNN/videos/save/79.jpg
writing to file:/content/Mask_RCNN/videos/save/80.jpg
frame_count :82
frame_count :83
frame_count :84
Predicted
writing to file:/content/Mask_RCNN/videos/save/81.jpg
writing to file:/content/Mask_RCNN/videos/save/82.jpg
writing to file:/content/Mask_RCNN/videos/save/83.jpg
frame_count :85
frame_count :86
frame_count :87
Predicted
writing to file:/content/Mask_RCNN/videos/save/84.jpg
writing to file:/content/Mask_RCNN/videos/save/85.jpg
writing to file:/content/Mask_RCNN/videos/save/86.jpg
frame_count :88
frame_count :89
frame_count :90
Predicted
writing to file:/content/Mask_RCNN/videos/save/87.jpg
writing to file:/content/Mask_RCNN/videos/save/88.jpg
writing to file:/content/Mask_RCNN/videos/save/89.jpg
frame_count :91
frame_count :92
frame_count :93
```

```
frame_count :93
Predicted
writing to file:/content/Mask_RCNN/videos/save/90.jpg
writing to file:/content/Mask_RCNN/videos/save/91.jpg
writing to file:/content/Mask_RCNN/videos/save/92.jpg
frame_count :94
frame_count :95
frame_count :96
Predicted
writing to file:/content/Mask_RCNN/videos/save/93.jpg
writing to file:/content/Mask_RCNN/videos/save/94.jpg
writing to file:/content/Mask_RCNN/videos/save/95.jpg
frame_count :97
frame_count :98
frame_count :99
Predicted
writing to file:/content/Mask_RCNN/videos/save/96.jpg
writing to file:/content/Mask_RCNN/videos/save/97.jpg
writing to file:/content/Mask_RCNN/videos/save/98.jpg
frame_count :100
frame_count :101
frame_count :102
Predicted
writing to file:/content/Mask_RCNN/videos/save/99.jpg
writing to file:/content/Mask_RCNN/videos/save/100.jpg
writing to file:/content/Mask_RCNN/videos/save/101.jpg
frame_count :103
frame_count :104
frame_count :105
Predicted
writing to file:/content/Mask_RCNN/videos/save/102.jpg
writing to file:/content/Mask_RCNN/videos/save/103.jpg
writing to file:/content/Mask_RCNN/videos/save/104.jpg
frame_count :106
frame_count :107
frame_count :108
Predicted
writing to file:/content/Mask_RCNN/videos/save/105.jpg
writing to file:/content/Mask_RCNN/videos/save/106.jpg
writing to file:/content/Mask_RCNN/videos/save/107.jpg
frame_count :109
frame_count :110
frame_count :111
Predicted
writing to file:/content/Mask_RCNN/videos/save/108.jpg
writing to file:/content/Mask_RCNN/videos/save/109.jpg
writing to file:/content/Mask_RCNN/videos/save/110.jpg
frame_count :112
frame_count :113
frame_count :114
Predicted
writing to file:/content/Mask_RCNN/videos/save/111.jpg
writing to file:/content/Mask_RCNN/videos/save/112.jpg
writing to file:/content/Mask_RCNN/videos/save/113.jpg
frame_count :115
frame_count :116
frame_count :117
Predicted
writing to file:/content/Mask_RCNN/videos/save/114.jpg
writing to file:/content/Mask_RCNN/videos/save/115.jpg
writing to file:/content/Mask_RCNN/videos/save/116.jpg
frame_count :118
frame_count :119
frame_count :120
Predicted
writing to file:/content/Mask_RCNN/videos/save/117.jpg
writing to file:/content/Mask_RCNN/videos/save/118.jpg
writing to file:/content/Mask_RCNN/videos/save/119.jpg
frame_count :121
frame_count :122
frame_count :123
Predicted
writing to file:/content/Mask_RCNN/videos/save/120.jpg
writing to file:/content/Mask_RCNN/videos/save/121.jpg
writing to file:/content/Mask_RCNN/videos/save/122.jpg
frame_count :124
frame_count :125
^
```

```
frame_count :126
Predicted
writing to file:/content/Mask_RCNN/videos/save/123.jpg
writing to file:/content/Mask_RCNN/videos/save/124.jpg
writing to file:/content/Mask_RCNN/videos/save/125.jpg
frame_count :127
frame_count :128
frame_count :129
Predicted
writing to file:/content/Mask_RCNN/videos/save/126.jpg
writing to file:/content/Mask_RCNN/videos/save/127.jpg
writing to file:/content/Mask_RCNN/videos/save/128.jpg
frame_count :130
frame_count :131
frame_count :132
Predicted
writing to file:/content/Mask_RCNN/videos/save/129.jpg
writing to file:/content/Mask_RCNN/videos/save/130.jpg
writing to file:/content/Mask_RCNN/videos/save/131.jpg
frame_count :133
frame_count :134
frame_count :135
Predicted
writing to file:/content/Mask_RCNN/videos/save/132.jpg
writing to file:/content/Mask_RCNN/videos/save/133.jpg
writing to file:/content/Mask_RCNN/videos/save/134.jpg
frame_count :136
frame_count :137
frame_count :138
Predicted
writing to file:/content/Mask_RCNN/videos/save/135.jpg
writing to file:/content/Mask_RCNN/videos/save/136.jpg
writing to file:/content/Mask_RCNN/videos/save/137.jpg
frame_count :139
frame_count :140
frame_count :141
Predicted
writing to file:/content/Mask_RCNN/videos/save/138.jpg
writing to file:/content/Mask_RCNN/videos/save/139.jpg
writing to file:/content/Mask_RCNN/videos/save/140.jpg
frame_count :142
frame_count :143
frame_count :144
Predicted
writing to file:/content/Mask_RCNN/videos/save/141.jpg
writing to file:/content/Mask_RCNN/videos/save/142.jpg
writing to file:/content/Mask_RCNN/videos/save/143.jpg
frame_count :145
frame_count :146
frame_count :147
Predicted
writing to file:/content/Mask_RCNN/videos/save/144.jpg
writing to file:/content/Mask_RCNN/videos/save/145.jpg
writing to file:/content/Mask_RCNN/videos/save/146.jpg
frame_count :148
frame_count :149
frame_count :150
Predicted
writing to file:/content/Mask_RCNN/videos/save/147.jpg
writing to file:/content/Mask_RCNN/videos/save/148.jpg
writing to file:/content/Mask_RCNN/videos/save/149.jpg
frame_count :151
frame_count :152
frame_count :153
Predicted
writing to file:/content/Mask_RCNN/videos/save/150.jpg
writing to file:/content/Mask_RCNN/videos/save/151.jpg
writing to file:/content/Mask_RCNN/videos/save/152.jpg
frame_count :154
frame_count :155
frame_count :156
Predicted
writing to file:/content/Mask_RCNN/videos/save/153.jpg
writing to file:/content/Mask_RCNN/videos/save/154.jpg
writing to file:/content/Mask_RCNN/videos/save/155.jpg
frame_count :157
frame_count :158
-
```

```
frame_count :159
Predicted
writing to file:/content/Mask_RCNN/videos/save/156.jpg
writing to file:/content/Mask_RCNN/videos/save/157.jpg
writing to file:/content/Mask_RCNN/videos/save/158.jpg
frame_count :160
frame_count :161
frame_count :162
Predicted
writing to file:/content/Mask_RCNN/videos/save/159.jpg
writing to file:/content/Mask_RCNN/videos/save/160.jpg
writing to file:/content/Mask_RCNN/videos/save/161.jpg
frame_count :163
frame_count :164
frame_count :165
Predicted
writing to file:/content/Mask_RCNN/videos/save/162.jpg
writing to file:/content/Mask_RCNN/videos/save/163.jpg
writing to file:/content/Mask_RCNN/videos/save/164.jpg
frame_count :166
frame_count :167
frame_count :168
Predicted
writing to file:/content/Mask_RCNN/videos/save/165.jpg
writing to file:/content/Mask_RCNN/videos/save/166.jpg
writing to file:/content/Mask_RCNN/videos/save/167.jpg
frame_count :169
frame_count :170
frame_count :171
Predicted
writing to file:/content/Mask_RCNN/videos/save/168.jpg
writing to file:/content/Mask_RCNN/videos/save/169.jpg
writing to file:/content/Mask_RCNN/videos/save/170.jpg
frame_count :172
frame_count :173
frame_count :174
Predicted
writing to file:/content/Mask_RCNN/videos/save/171.jpg
writing to file:/content/Mask_RCNN/videos/save/172.jpg
writing to file:/content/Mask_RCNN/videos/save/173.jpg
frame_count :175
frame_count :176
frame_count :177
Predicted
writing to file:/content/Mask_RCNN/videos/save/174.jpg
writing to file:/content/Mask_RCNN/videos/save/175.jpg
writing to file:/content/Mask_RCNN/videos/save/176.jpg
frame_count :178
frame_count :179
frame_count :180
Predicted
writing to file:/content/Mask_RCNN/videos/save/177.jpg
writing to file:/content/Mask_RCNN/videos/save/178.jpg
writing to file:/content/Mask_RCNN/videos/save/179.jpg
frame_count :181
frame_count :182
frame_count :183
Predicted
writing to file:/content/Mask_RCNN/videos/save/180.jpg
writing to file:/content/Mask_RCNN/videos/save/181.jpg
writing to file:/content/Mask_RCNN/videos/save/182.jpg
frame_count :184
frame_count :185
frame_count :186
Predicted
writing to file:/content/Mask_RCNN/videos/save/183.jpg
writing to file:/content/Mask_RCNN/videos/save/184.jpg
writing to file:/content/Mask_RCNN/videos/save/185.jpg
frame_count :187
frame_count :188
frame_count :189
Predicted
writing to file:/content/Mask_RCNN/videos/save/186.jpg
writing to file:/content/Mask_RCNN/videos/save/187.jpg
writing to file:/content/Mask_RCNN/videos/save/188.jpg
frame_count :190
frame_count :191
```



```
frame_count :192
Predicted
writing to file:/content/Mask_RCNN/videos/save/189.jpg
writing to file:/content/Mask_RCNN/videos/save/190.jpg
writing to file:/content/Mask_RCNN/videos/save/191.jpg
frame_count :193
frame_count :194
frame_count :195
Predicted
writing to file:/content/Mask_RCNN/videos/save/192.jpg
writing to file:/content/Mask_RCNN/videos/save/193.jpg
writing to file:/content/Mask_RCNN/videos/save/194.jpg
frame_count :196
frame_count :197
frame_count :198
Predicted
writing to file:/content/Mask_RCNN/videos/save/195.jpg
writing to file:/content/Mask_RCNN/videos/save/196.jpg
writing to file:/content/Mask_RCNN/videos/save/197.jpg
frame_count :199
frame_count :200
frame_count :201
Predicted
writing to file:/content/Mask_RCNN/videos/save/198.jpg
writing to file:/content/Mask_RCNN/videos/save/199.jpg
writing to file:/content/Mask_RCNN/videos/save/200.jpg
frame_count :202
frame_count :203
frame_count :204
Predicted
writing to file:/content/Mask_RCNN/videos/save/201.jpg
writing to file:/content/Mask_RCNN/videos/save/202.jpg
writing to file:/content/Mask_RCNN/videos/save/203.jpg
frame_count :205
frame_count :206
frame_count :207
Predicted
writing to file:/content/Mask_RCNN/videos/save/204.jpg
writing to file:/content/Mask_RCNN/videos/save/205.jpg
writing to file:/content/Mask_RCNN/videos/save/206.jpg
frame_count :208
frame_count :209
frame_count :210
Predicted
writing to file:/content/Mask_RCNN/videos/save/207.jpg
writing to file:/content/Mask_RCNN/videos/save/208.jpg
writing to file:/content/Mask_RCNN/videos/save/209.jpg
frame_count :211
frame_count :212
frame_count :213
Predicted
writing to file:/content/Mask_RCNN/videos/save/210.jpg
writing to file:/content/Mask_RCNN/videos/save/211.jpg
writing to file:/content/Mask_RCNN/videos/save/212.jpg
frame_count :214
frame_count :215
frame_count :216
Predicted
writing to file:/content/Mask_RCNN/videos/save/213.jpg
writing to file:/content/Mask_RCNN/videos/save/214.jpg
writing to file:/content/Mask_RCNN/videos/save/215.jpg
frame_count :217
frame_count :218
frame_count :219
Predicted
writing to file:/content/Mask_RCNN/videos/save/216.jpg
writing to file:/content/Mask_RCNN/videos/save/217.jpg
writing to file:/content/Mask_RCNN/videos/save/218.jpg
frame_count :220
frame_count :221
frame_count :222
Predicted
writing to file:/content/Mask_RCNN/videos/save/219.jpg
writing to file:/content/Mask_RCNN/videos/save/220.jpg
writing to file:/content/Mask_RCNN/videos/save/221.jpg
frame_count :223
frame_count :224
```

```
frame_count :225
Predicted
writing to file:/content/Mask_RCNN/videos/save/222.jpg
writing to file:/content/Mask_RCNN/videos/save/223.jpg
writing to file:/content/Mask_RCNN/videos/save/224.jpg
frame_count :226
frame_count :227
frame_count :228
Predicted
writing to file:/content/Mask_RCNN/videos/save/225.jpg
writing to file:/content/Mask_RCNN/videos/save/226.jpg
writing to file:/content/Mask_RCNN/videos/save/227.jpg
frame_count :229
frame_count :230
frame_count :231
Predicted
writing to file:/content/Mask_RCNN/videos/save/228.jpg
writing to file:/content/Mask_RCNN/videos/save/229.jpg
writing to file:/content/Mask_RCNN/videos/save/230.jpg
frame_count :232
frame_count :233
frame_count :234
Predicted
writing to file:/content/Mask_RCNN/videos/save/231.jpg
writing to file:/content/Mask_RCNN/videos/save/232.jpg
writing to file:/content/Mask_RCNN/videos/save/233.jpg
frame_count :235
frame_count :236
frame_count :237
Predicted
writing to file:/content/Mask_RCNN/videos/save/234.jpg
writing to file:/content/Mask_RCNN/videos/save/235.jpg
writing to file:/content/Mask_RCNN/videos/save/236.jpg
frame_count :238
frame_count :239
frame_count :240
Predicted
writing to file:/content/Mask_RCNN/videos/save/237.jpg
writing to file:/content/Mask_RCNN/videos/save/238.jpg
writing to file:/content/Mask_RCNN/videos/save/239.jpg
frame_count :241
frame_count :242
frame_count :243
Predicted
writing to file:/content/Mask_RCNN/videos/save/240.jpg
writing to file:/content/Mask_RCNN/videos/save/241.jpg
writing to file:/content/Mask_RCNN/videos/save/242.jpg
frame_count :244
frame_count :245
frame_count :246
Predicted
writing to file:/content/Mask_RCNN/videos/save/243.jpg
writing to file:/content/Mask_RCNN/videos/save/244.jpg
writing to file:/content/Mask_RCNN/videos/save/245.jpg
frame_count :247
frame_count :248
frame_count :249
Predicted
writing to file:/content/Mask_RCNN/videos/save/246.jpg
writing to file:/content/Mask_RCNN/videos/save/247.jpg
writing to file:/content/Mask_RCNN/videos/save/248.jpg
frame_count :250
frame_count :251
frame_count :252
Predicted
writing to file:/content/Mask_RCNN/videos/save/249.jpg
writing to file:/content/Mask_RCNN/videos/save/250.jpg
writing to file:/content/Mask_RCNN/videos/save/251.jpg
frame_count :253
frame_count :254
frame_count :255
Predicted
writing to file:/content/Mask_RCNN/videos/save/252.jpg
writing to file:/content/Mask_RCNN/videos/save/253.jpg
writing to file:/content/Mask_RCNN/videos/save/254.jpg
frame_count :256
frame_count :257
```

```
frame_count :258
Predicted
writing to file:/content/Mask_RCNN/videos/save/255.jpg
writing to file:/content/Mask_RCNN/videos/save/256.jpg
writing to file:/content/Mask_RCNN/videos/save/257.jpg
frame_count :259
frame_count :260
frame_count :261
Predicted
writing to file:/content/Mask_RCNN/videos/save/258.jpg
writing to file:/content/Mask_RCNN/videos/save/259.jpg
writing to file:/content/Mask_RCNN/videos/save/260.jpg
frame_count :262
frame_count :263
frame_count :264
Predicted
writing to file:/content/Mask_RCNN/videos/save/261.jpg
writing to file:/content/Mask_RCNN/videos/save/262.jpg
writing to file:/content/Mask_RCNN/videos/save/263.jpg
frame_count :265
frame_count :266
frame_count :267
Predicted
writing to file:/content/Mask_RCNN/videos/save/264.jpg
writing to file:/content/Mask_RCNN/videos/save/265.jpg
writing to file:/content/Mask_RCNN/videos/save/266.jpg
frame_count :268
frame_count :269
frame_count :270
Predicted
writing to file:/content/Mask_RCNN/videos/save/267.jpg
writing to file:/content/Mask_RCNN/videos/save/268.jpg
writing to file:/content/Mask_RCNN/videos/save/269.jpg
frame_count :271
frame_count :272
frame_count :273
Predicted
writing to file:/content/Mask_RCNN/videos/save/270.jpg
writing to file:/content/Mask_RCNN/videos/save/271.jpg
writing to file:/content/Mask_RCNN/videos/save/272.jpg
frame_count :274
frame_count :275
frame_count :276
Predicted
writing to file:/content/Mask_RCNN/videos/save/273.jpg
writing to file:/content/Mask_RCNN/videos/save/274.jpg
writing to file:/content/Mask_RCNN/videos/save/275.jpg
frame_count :277
frame_count :278
frame_count :279
Predicted
writing to file:/content/Mask_RCNN/videos/save/276.jpg
writing to file:/content/Mask_RCNN/videos/save/277.jpg
writing to file:/content/Mask_RCNN/videos/save/278.jpg
frame_count :280
frame_count :281
frame_count :282
Predicted
writing to file:/content/Mask_RCNN/videos/save/279.jpg
writing to file:/content/Mask_RCNN/videos/save/280.jpg
writing to file:/content/Mask_RCNN/videos/save/281.jpg
frame_count :283
frame_count :284
frame_count :285
Predicted
writing to file:/content/Mask_RCNN/videos/save/282.jpg
writing to file:/content/Mask_RCNN/videos/save/283.jpg
writing to file:/content/Mask_RCNN/videos/save/284.jpg
frame_count :286
frame_count :287
frame_count :288
Predicted
writing to file:/content/Mask_RCNN/videos/save/285.jpg
writing to file:/content/Mask_RCNN/videos/save/286.jpg
writing to file:/content/Mask_RCNN/videos/save/287.jpg
frame_count :289
frame_count :290
```

```
frame_count :291
Predicted
writing to file:/content/Mask_RCNN/videos/save/288.jpg
writing to file:/content/Mask_RCNN/videos/save/289.jpg
writing to file:/content/Mask_RCNN/videos/save/290.jpg
frame_count :292
frame_count :293
frame_count :294
Predicted
writing to file:/content/Mask_RCNN/videos/save/291.jpg
writing to file:/content/Mask_RCNN/videos/save/292.jpg
writing to file:/content/Mask_RCNN/videos/save/293.jpg
frame_count :295
frame_count :296
frame_count :297
Predicted
writing to file:/content/Mask_RCNN/videos/save/294.jpg
writing to file:/content/Mask_RCNN/videos/save/295.jpg
writing to file:/content/Mask_RCNN/videos/save/296.jpg
frame_count :298
frame_count :299
frame_count :300
Predicted
writing to file:/content/Mask_RCNN/videos/save/297.jpg
writing to file:/content/Mask_RCNN/videos/save/298.jpg
writing to file:/content/Mask_RCNN/videos/save/299.jpg
frame_count :301
frame_count :302
frame_count :303
Predicted
writing to file:/content/Mask_RCNN/videos/save/300.jpg
writing to file:/content/Mask_RCNN/videos/save/301.jpg
writing to file:/content/Mask_RCNN/videos/save/302.jpg
frame_count :304
frame_count :305
frame_count :306
Predicted
writing to file:/content/Mask_RCNN/videos/save/303.jpg
writing to file:/content/Mask_RCNN/videos/save/304.jpg
writing to file:/content/Mask_RCNN/videos/save/305.jpg
frame_count :307
frame_count :308
frame_count :309
Predicted
writing to file:/content/Mask_RCNN/videos/save/306.jpg
writing to file:/content/Mask_RCNN/videos/save/307.jpg
writing to file:/content/Mask_RCNN/videos/save/308.jpg
frame_count :310
frame_count :311
frame_count :312
Predicted
writing to file:/content/Mask_RCNN/videos/save/309.jpg
writing to file:/content/Mask_RCNN/videos/save/310.jpg
writing to file:/content/Mask_RCNN/videos/save/311.jpg
frame_count :313
frame_count :314
frame_count :315
Predicted
writing to file:/content/Mask_RCNN/videos/save/312.jpg
writing to file:/content/Mask_RCNN/videos/save/313.jpg
writing to file:/content/Mask_RCNN/videos/save/314.jpg
frame_count :316
frame_count :317
frame_count :318
Predicted
writing to file:/content/Mask_RCNN/videos/save/315.jpg
writing to file:/content/Mask_RCNN/videos/save/316.jpg
writing to file:/content/Mask_RCNN/videos/save/317.jpg
frame_count :319
frame_count :320
frame_count :321
Predicted
writing to file:/content/Mask_RCNN/videos/save/318.jpg
writing to file:/content/Mask_RCNN/videos/save/319.jpg
writing to file:/content/Mask_RCNN/videos/save/320.jpg
frame_count :322
frame_count :323
```



```
frame_count :324
Predicted
writing to file:/content/Mask_RCNN/videos/save/321.jpg
writing to file:/content/Mask_RCNN/videos/save/322.jpg
writing to file:/content/Mask_RCNN/videos/save/323.jpg
frame_count :325
frame_count :326
frame_count :327
Predicted
writing to file:/content/Mask_RCNN/videos/save/324.jpg
writing to file:/content/Mask_RCNN/videos/save/325.jpg
writing to file:/content/Mask_RCNN/videos/save/326.jpg
frame_count :328
frame_count :329
frame_count :330
Predicted
writing to file:/content/Mask_RCNN/videos/save/327.jpg
writing to file:/content/Mask_RCNN/videos/save/328.jpg
writing to file:/content/Mask_RCNN/videos/save/329.jpg
frame_count :331
frame_count :332
frame_count :333
Predicted
writing to file:/content/Mask_RCNN/videos/save/330.jpg
writing to file:/content/Mask_RCNN/videos/save/331.jpg
writing to file:/content/Mask_RCNN/videos/save/332.jpg
frame_count :334
frame_count :335
frame_count :336
Predicted
writing to file:/content/Mask_RCNN/videos/save/333.jpg
writing to file:/content/Mask_RCNN/videos/save/334.jpg
writing to file:/content/Mask_RCNN/videos/save/335.jpg
frame_count :337
frame_count :338
frame_count :339
Predicted
writing to file:/content/Mask_RCNN/videos/save/336.jpg
writing to file:/content/Mask_RCNN/videos/save/337.jpg
writing to file:/content/Mask_RCNN/videos/save/338.jpg
frame_count :340
frame_count :341
frame_count :342
Predicted
writing to file:/content/Mask_RCNN/videos/save/339.jpg
writing to file:/content/Mask_RCNN/videos/save/340.jpg
writing to file:/content/Mask_RCNN/videos/save/341.jpg
frame_count :343
frame_count :344
frame_count :345
Predicted
writing to file:/content/Mask_RCNN/videos/save/342.jpg
writing to file:/content/Mask_RCNN/videos/save/343.jpg
writing to file:/content/Mask_RCNN/videos/save/344.jpg
frame_count :346
frame_count :347
frame_count :348
Predicted
writing to file:/content/Mask_RCNN/videos/save/345.jpg
writing to file:/content/Mask_RCNN/videos/save/346.jpg
writing to file:/content/Mask_RCNN/videos/save/347.jpg
frame_count :349
frame_count :350
frame_count :351
Predicted
writing to file:/content/Mask_RCNN/videos/save/348.jpg
writing to file:/content/Mask_RCNN/videos/save/349.jpg
writing to file:/content/Mask_RCNN/videos/save/350.jpg
frame_count :352
frame_count :353
frame_count :354
Predicted
writing to file:/content/Mask_RCNN/videos/save/351.jpg
writing to file:/content/Mask_RCNN/videos/save/352.jpg
writing to file:/content/Mask_RCNN/videos/save/353.jpg
frame_count :355
frame_count :356
```

```
frame_count :357
Predicted
writing to file:/content/Mask_RCNN/videos/save/354.jpg
writing to file:/content/Mask_RCNN/videos/save/355.jpg
writing to file:/content/Mask_RCNN/videos/save/356.jpg
frame_count :358
frame_count :359
frame_count :360
Predicted
writing to file:/content/Mask_RCNN/videos/save/357.jpg
writing to file:/content/Mask_RCNN/videos/save/358.jpg
writing to file:/content/Mask_RCNN/videos/save/359.jpg
frame_count :361
frame_count :362
frame_count :363
Predicted
writing to file:/content/Mask_RCNN/videos/save/360.jpg
writing to file:/content/Mask_RCNN/videos/save/361.jpg
writing to file:/content/Mask_RCNN/videos/save/362.jpg
frame_count :364
frame_count :365
frame_count :366
Predicted
writing to file:/content/Mask_RCNN/videos/save/363.jpg
writing to file:/content/Mask_RCNN/videos/save/364.jpg
writing to file:/content/Mask_RCNN/videos/save/365.jpg
frame_count :367
frame_count :368
frame_count :369
Predicted
writing to file:/content/Mask_RCNN/videos/save/366.jpg
writing to file:/content/Mask_RCNN/videos/save/367.jpg
writing to file:/content/Mask_RCNN/videos/save/368.jpg
frame_count :370
frame_count :371
frame_count :372
Predicted
writing to file:/content/Mask_RCNN/videos/save/369.jpg
writing to file:/content/Mask_RCNN/videos/save/370.jpg
writing to file:/content/Mask_RCNN/videos/save/371.jpg
frame_count :373
frame_count :374
frame_count :375
Predicted
writing to file:/content/Mask_RCNN/videos/save/372.jpg
writing to file:/content/Mask_RCNN/videos/save/373.jpg
writing to file:/content/Mask_RCNN/videos/save/374.jpg
frame_count :376
frame_count :377
frame_count :378
Predicted
writing to file:/content/Mask_RCNN/videos/save/375.jpg
writing to file:/content/Mask_RCNN/videos/save/376.jpg
writing to file:/content/Mask_RCNN/videos/save/377.jpg
frame_count :379
frame_count :380
frame_count :381
Predicted
writing to file:/content/Mask_RCNN/videos/save/378.jpg
writing to file:/content/Mask_RCNN/videos/save/379.jpg
writing to file:/content/Mask_RCNN/videos/save/380.jpg
frame_count :382
frame_count :383
frame_count :384
Predicted
writing to file:/content/Mask_RCNN/videos/save/381.jpg
writing to file:/content/Mask_RCNN/videos/save/382.jpg
writing to file:/content/Mask_RCNN/videos/save/383.jpg
frame_count :385
frame_count :386
frame_count :387
Predicted
writing to file:/content/Mask_RCNN/videos/save/384.jpg
writing to file:/content/Mask_RCNN/videos/save/385.jpg
writing to file:/content/Mask_RCNN/videos/save/386.jpg
frame_count :388
frame_count :389
```

```
frame_count :390
Predicted
writing to file:/content/Mask_RCNN/videos/save/387.jpg
writing to file:/content/Mask_RCNN/videos/save/388.jpg
writing to file:/content/Mask_RCNN/videos/save/389.jpg
frame_count :391
frame_count :392
frame_count :393
Predicted
writing to file:/content/Mask_RCNN/videos/save/390.jpg
writing to file:/content/Mask_RCNN/videos/save/391.jpg
writing to file:/content/Mask_RCNN/videos/save/392.jpg
frame_count :394
frame_count :395
frame_count :396
Predicted
writing to file:/content/Mask_RCNN/videos/save/393.jpg
writing to file:/content/Mask_RCNN/videos/save/394.jpg
writing to file:/content/Mask_RCNN/videos/save/395.jpg
frame_count :397
frame_count :398
frame_count :399
Predicted
writing to file:/content/Mask_RCNN/videos/save/396.jpg
writing to file:/content/Mask_RCNN/videos/save/397.jpg
writing to file:/content/Mask_RCNN/videos/save/398.jpg
frame_count :400
frame_count :401
frame_count :402
Predicted
writing to file:/content/Mask_RCNN/videos/save/399.jpg
writing to file:/content/Mask_RCNN/videos/save/400.jpg
writing to file:/content/Mask_RCNN/videos/save/401.jpg
frame_count :403
frame_count :404
frame_count :405
Predicted
writing to file:/content/Mask_RCNN/videos/save/402.jpg
writing to file:/content/Mask_RCNN/videos/save/403.jpg
writing to file:/content/Mask_RCNN/videos/save/404.jpg
frame_count :406
frame_count :407
frame_count :408
Predicted
writing to file:/content/Mask_RCNN/videos/save/405.jpg
writing to file:/content/Mask_RCNN/videos/save/406.jpg
writing to file:/content/Mask_RCNN/videos/save/407.jpg
frame_count :409
frame_count :410
frame_count :411
Predicted
writing to file:/content/Mask_RCNN/videos/save/408.jpg
writing to file:/content/Mask_RCNN/videos/save/409.jpg
writing to file:/content/Mask_RCNN/videos/save/410.jpg
frame_count :412
frame_count :413
frame_count :414
Predicted
writing to file:/content/Mask_RCNN/videos/save/411.jpg
writing to file:/content/Mask_RCNN/videos/save/412.jpg
writing to file:/content/Mask_RCNN/videos/save/413.jpg
frame_count :415
frame_count :416
frame_count :417
Predicted
writing to file:/content/Mask_RCNN/videos/save/414.jpg
writing to file:/content/Mask_RCNN/videos/save/415.jpg
writing to file:/content/Mask_RCNN/videos/save/416.jpg
frame_count :418
frame_count :419
frame_count :420
Predicted
writing to file:/content/Mask_RCNN/videos/save/417.jpg
writing to file:/content/Mask_RCNN/videos/save/418.jpg
writing to file:/content/Mask_RCNN/videos/save/419.jpg
frame_count :421
frame count :422
```

```

frame_count : 423
Predicted
writing to file:/content/Mask_RCNN/videos/save/420.jpg
writing to file:/content/Mask_RCNN/videos/save/421.jpg
writing to file:/content/Mask_RCNN/videos/save/422.jpg
frame_count : 424
frame_count : 425
frame_count : 426
Predicted
writing to file:/content/Mask_RCNN/videos/save/423.jpg
writing to file:/content/Mask_RCNN/videos/save/424.jpg
writing to file:/content/Mask_RCNN/videos/save/425.jpg
frame_count : 427
frame_count : 428
frame_count : 429
Predicted
writing to file:/content/Mask_RCNN/videos/save/426.jpg
writing to file:/content/Mask_RCNN/videos/save/427.jpg
writing to file:/content/Mask_RCNN/videos/save/428.jpg
frame_count : 430
frame_count : 431
frame_count : 432
Predicted
writing to file:/content/Mask_RCNN/videos/save/429.jpg
writing to file:/content/Mask_RCNN/videos/save/430.jpg
writing to file:/content/Mask_RCNN/videos/save/431.jpg
frame_count : 433
frame_count : 434
frame_count : 435
Predicted
writing to file:/content/Mask_RCNN/videos/save/432.jpg
writing to file:/content/Mask_RCNN/videos/save/433.jpg
writing to file:/content/Mask_RCNN/videos/save/434.jpg
frame_count : 436
frame_count : 437
frame_count : 438
Predicted
writing to file:/content/Mask_RCNN/videos/save/435.jpg
writing to file:/content/Mask_RCNN/videos/save/436.jpg
writing to file:/content/Mask_RCNN/videos/save/437.jpg

```

finding the frame per second in the movies

In [0]:

```

video = cv2.VideoCapture(os.path.join(VIDEO_DIR, 'videos.mp4'));

# Find OpenCV version
(major_ver, minor_ver, subminor_ver) = (cv2.__version__).split('.')

if int(major_ver) < 3 :
    fps = video.get(cv2.cv.CV_CAP_PROP_FPS)
    print("Frames per second using video.get(cv2.cv.CV_CAP_PROP_FPS): {0}".format(fps))
else :
    fps = video.get(cv2.CAP_PROP_FPS)
    print("Frames per second using video.get(cv2.CAP_PROP_FPS) : {0}".format(fps))

video.release()

```

Frames per second using video.get(cv2.CAP_PROP_FPS) : 10.0

form the video out of the images on which we have applied mask rcnn

In [0]:

```

def make_video(outvid, images=None, fps=10, size=None,
               is_color=True, format="FMP4"):
    """
    Create a video from a list of images.

    @param      outvid      output video
    @param      images      list of images to use in the video
    @param      fps         frame per second
    """

```



```

@param      size      size of each frame
@param      is_color   color
@param      format     see http://www.fourcc.org/codecs.php
@return     see http://opencv-python-
tutroals.readthedocs.org/en/latest/py_tutorials/py_gui/py_video_display/py_video_display.html

```

The function relies on <http://opencv-python-tutroals.readthedocs.org/en/latest/>.
By default, the video will have the size of the first image.
It will resize every image to this size before adding them to the video.

```

"""
from cv2 import VideoWriter, VideoWriter_fourcc, imread, resize
fourcc = VideoWriter_fourcc(*format)
vid = None
for image in images:
    if not os.path.exists(image):
        raise FileNotFoundError(image)
    img = imread(image)
    if vid is None:
        if size is None:
            size = img.shape[1], img.shape[0]
        vid = VideoWriter(outvid, fourcc, float(fps), size, is_color)
    if size[0] != img.shape[1] and size[1] != img.shape[0]:
        img = resize(img, size)
    vid.write(img)
vid.release()
return vid

```

```

import glob
import os

```

```

# Directory of images to run detection on
ROOT_DIR = os.getcwd()
VIDEO_DIR = os.path.join(ROOT_DIR, "videos")
VIDEO_SAVE_DIR = os.path.join(VIDEO_DIR, "save")
images = list(glob.iglob(os.path.join(VIDEO_SAVE_DIR, '*.*')))
# Sort the images by integer index
images = sorted(images, key=lambda x: float(os.path.split(x)[1][:3]))

outvid = os.path.join(VIDEO_DIR, "out.mp4")
make_video(outvid, images, fps=30)

```

Out[0]:

```
<VideoWriter 0x7ff6ebd698f0>
```

download the video

In [0]:

```

from google.colab import files
files.download('videos/out.mp4')

```

[output video link](#)

Steps used-

- 1-Clone the repository(git clone https://github.com/matterport/Mask_RCNN.git)
- 2-change the working directory to Mask_RCNN
- 3-download the data on which prediction is to be made(Flickr_data)
- 4-import the required libraries and define the path for the pretrained weights and the images on which we would like to perform segmentation.
- 5-Create an inference class which will be used to infer the Mask R-CNN model
- 6-Next, we will create our model and load the pretrained weights which we downloaded earlier
- 7-define the classes of the COCO dataset which will help us in the prediction phase
- 8-We will use the Mask R-CNN model along with the pretrained weights and segments the object.

9-make the movie out of the images present in the flickr_data

10-now from the movie,take 3 images at the time and make prediction on it and save it the desired folder.

11-form the video out of the images on which we have applied mask rcnn

12-download the output video.

Reference-

<https://www.analyticsvidhya.com/blog/2019/07/computer-vision-implementing-mask-r-cnn-image-segmentation/>