

Problem Statement:

Consider any image with size 1024x1024. Modify the image to the sizes 512x512, 256x256, 128x128, 64x64 and 32x32 using subsampling technique. Create the original image from all the above subsampled images using resampling technique.

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In [2]: %cd ..
```

```
/
```

```
In [3]: import cv2
from google.colab.patches import cv2_imshow
```

```
In [13]: # Load the image
image = cv2.imread("tiger_large_image.jpeg")
cv2_imshow(image)
```



```
In [14]: height, width = image.shape[:2]
print(width)
print(height)
```

```
1024
1024
```

Sub-sampling the original image (1024x1024) to size: 512x512.

```
In [22]: # Calculate the new dimensions of the image
new_height = 512
new_width = 512

# Resize the image using subsampling
resized_image1 = cv2.resize(image, (new_width, new_height), interpolation=cv2.INTER_LINEAR)
cv2_imshow(resized_image1)
```



Sub-sampling the original image (1024x1024) to size: 256x256.

```
In [23]: # Calculate the new dimensions of the image
new_height = 256
new_width = 256

# Resize the image using subsampling
resized_image2 = cv2.resize(image, (new_width, new_height), interpolation=cv2.INTER_LINEAR)
cv2.imshow(resized_image2)
```



Sub-sampling the original image (1024x1024) to size: 128x128.

```
In [24]: # Calculate the new dimensions of the image
```

```
new_height = 128
new_width = 128

# Resize the image using subsampling
resized_image3 = cv2.resize(image, (new_width, new_height), interpolation=cv2.INTER_LINEAR)
cv2_imshow(resized_image3)
```



Sub-sampling the original image (1024x1024) to size: 64x64.

```
In [25]: # Calculate the new dimensions of the image
new_height = 64
new_width = 64

# Resize the image using subsampling
resized_image4 = cv2.resize(image, (new_width, new_height), interpolation=cv2.INTER_LINEAR)
cv2_imshow(resized_image4)
```



Sub-sampling the original image (1024x1024) to size: 32x32.

```
In [26]: # Calculate the new dimensions of the image
new_height = 32
new_width = 32

# Resize the image using subsampling
resized_image5 = cv2.resize(image, (new_width, new_height), interpolation=cv2.INTER_LINEAR)
cv2_imshow(resized_image5)
```



Re-sampling the image of size 512x512 to the original size (1024x1024):

```
In [27]: # Calculate the new dimensions of the image
new_height = 1024
new_width = 1024

# Resize the image resampling to original size
new_original_image1 = cv2.resize(resized_image1, (new_width, new_height), interpolation=cv2.INTER_LINEAR)
cv2_imshow(new_original_image1)
```



Re-sampling the image of size 256x256 to the original size (1024x1024):

```
In [28]: # Resize the image resampling to original size  
new_original_image2 = cv2.resize(resized_image2, (new_width, new_height), interpolation=  
cv2_imshow(new_original_image2)
```



Re-sampling the image of size 128x128 to the original size (1024x1024):

```
In [29]: # Resize the image resampling to original size
new_original_image3 = cv2.resize(resized_image3, (new_width, new_height), interpolation=cv2_imshow(new_original_image3)
```



Re-sampling the image of size 64x64 to the original size (1024x1024):

```
In [30]: # Resize the image resampling to original size  
new_original_image4 = cv2.resize(resized_image4, (new_width, new_height), interpolation=  
cv2_imshow(new_original_image4)
```



Re-sampling the image of size 32x32 to the original size (1024x1024):

```
In [31]: # Resize the image resampling to original size  
new_original_image5 = cv2.resize(resized_image5, (new_width, new_height), interpolation=cv2_imshow(new_original_image5)
```



In []: