__Thresholding__

S = 1 if r>=threshold

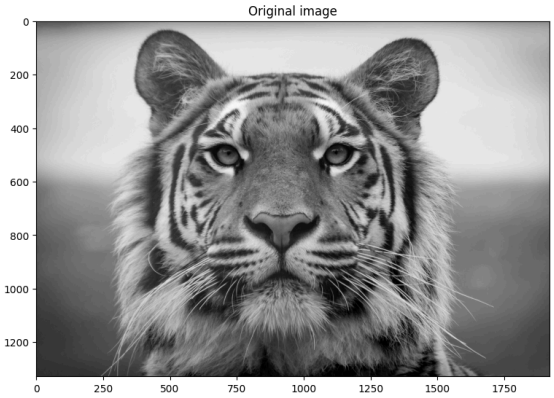
S = 0 if r< threshold

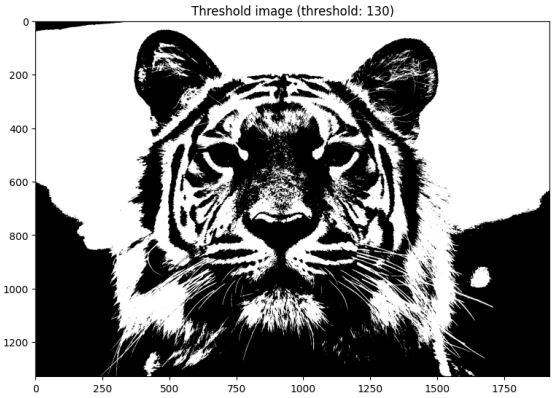
In [1]:
```
#import libraries
import numpy as np
from PIL import Image
import matplotlib.pyplot as plt
```

In [2]:
```
def Threshold_Image(image):
  threshold = int(input("Enter Value of threshold: "))
  # image = image.resize((400,400), Image.Resampling.LANCZOS)
  # convert to numpy array
  numpy_image = np.array(image)

  row = numpy_image.shape[0]
  column = numpy_image.shape[1]

  new_array = np.zeros(shape=(row,column))

  for i in range(row):
    for j in range(column):
      if(numpy_image[i][j]>=threshold):
        new_array[i][j] = 255
      else:
        new_array[i][j] = 0

  #converting array back to image
  threshold_image = Image.fromarray(new_array)
  threshold_image = threshold_image.convert("L")

  return threshold_image, threshold
```

In [3]:
```
# reading image and converting to gray scale
image = Image.open('../images/tiger.jpg').convert('L')
# calling negative function
threshold_image, threshold_value = Threshold_Image(image)


#displaying the images
fig = plt.figure()
fig.set_figheight(20)
fig.set_figwidth(20)

fig.add_subplot(1,2,1)
plt.imshow(image, cmap='gray')
plt.title('Original image')

fig.add_subplot(1,2,2)
plt.imshow(threshold_image, cmap='gray')
plt.title(f'Threshold image (threshold: {threshold_value})')
```

Out[3]:
```
Text(0.5, 1.0, 'Threshold image (threshold: 130)')
```


Original image
0
200
400
600
800
1000
1200
0
250
500
750
1000
1250
1500
1750


Threshold image (threshold: 130)
0
200
400
600
800
1000
1200
0
250
500
750
1000
1250
1500
1750