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In [1]: import matplotlib.pyplot as plt
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In [2]: from matplotlib.image import imread
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In [3]: import numpy as np
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In [4]: import cv2 as cv
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In [5]: import os
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In [6]: from numpy import array
from scipy.linalg import svd
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In [7]: #plt.rcParams['figure.figsize']= [16,8]
A = imread('image4.jpg')
#X = np.mean(A)

image = plt.imshow(A)
image.set_cmap('gray')
plt.axis('off')
plt.show()
```

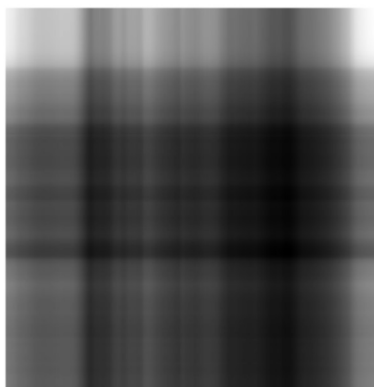


```
In [8]: U, S, VT = svd(A, full_matrices = False)
#print(U)
#print(S)
#print(VT)
```

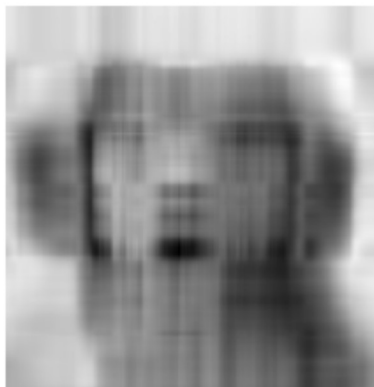
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In [9]: S = np.diag(S)
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In [14]: j = 0
         for r in (1, 5, 10, 50, 100):
             Xapp = U[:, :r] @ S[:, :r] @ VT[:, :]
             plt.figure(j+1)
             j+=1
             img = plt.imshow(Xapp)
             img.set_cmap('gray')
             plt.axis('off')
             plt.title('r = ' + str(r))
             plt.show()
```

r - 1



r - 5



r - 10



r - 50



r - 100



In []: