(Spring 2024) **Ishikaa Lunawat**

On to the problems!

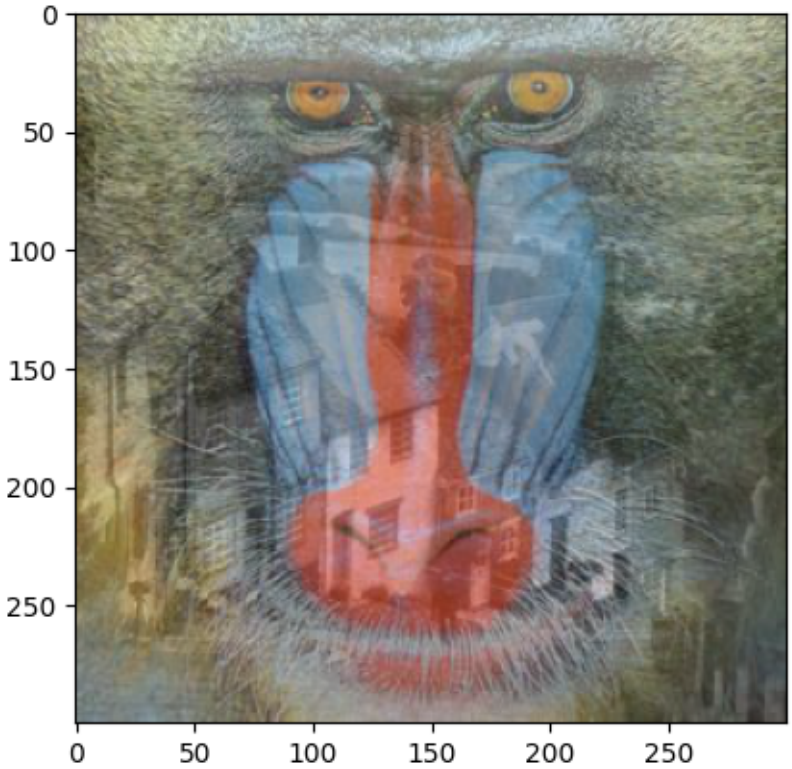
1 Basic Matrix/Vector Manipulation (20 points)

(e) Tiling/stacking the column vectors column-wise (axis 1) and performing element-wise multiplication on the matrix M (using * operator)

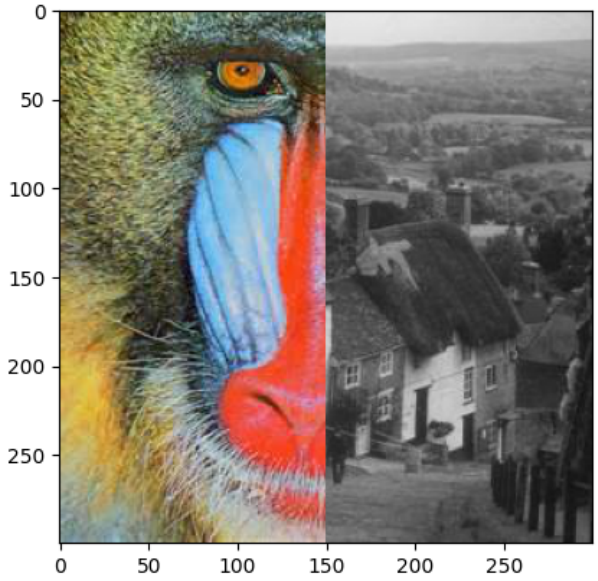
(f) Using `np.sort()` to sort all elements in as if it were a flattened, 1D array (axis=None)

2 Basic Image Manipulations (40 points)

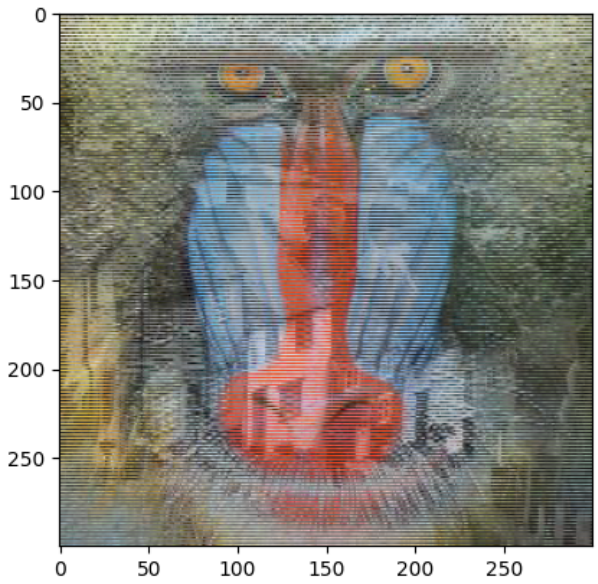
(c) Summed normalized images



(d) Half half

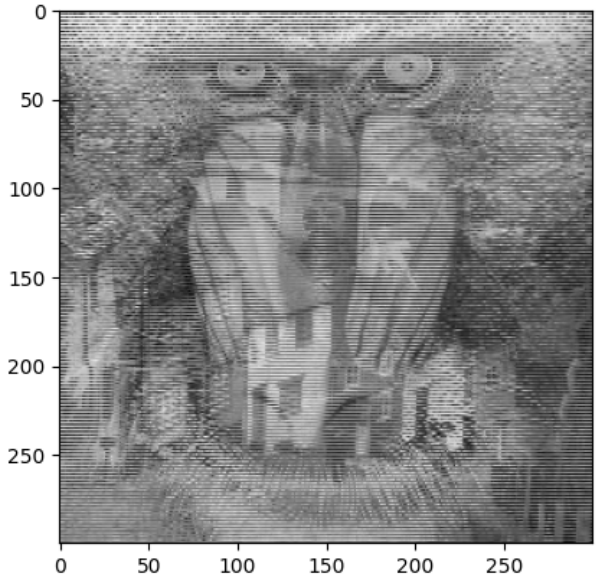


(e) Row selected image



(f) First assign the new image to be the same as either image, say `img1`. Assign to (respectively) the odd/even rows of new image with the other image's corresponding odd/even rows (`img2[::-2]`). The `::2` selects all the even indices or picking every 2nd index.

(g) Grayscale



3 Singular Value Decomposition (40 points)

(b) Rank-1 approximation

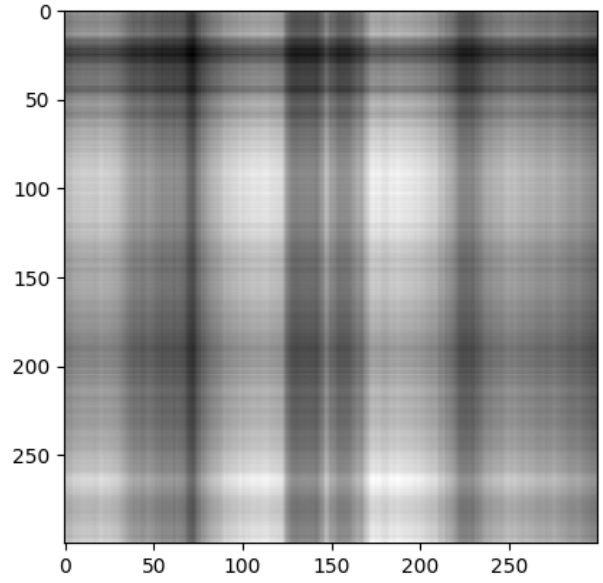


Figure 1: Caption

(c) Rank-20 approximation