Is there a tradeoff between image quality and degree of compression?

The k value is in range [2,5,10,15,20], the result shows the quality of the image getting better while k increases, in which the lower degree of compression is, the better result we will get, but the time to compressed/ decompressed and running will cost more time.

What would be a good value of K for each of the two images?

For image Penguins, the best k value I think is k = 15, in which we do not have too much information lost during the compression and have a better running time than k = 20. And it has present more clearer than k = 10, in which the background kind noisy.

For image Koala, the best k value I think is k = 20. The observation shows when k = 10 and k=15 there is not much difference between these two pictures and the koala's face seems darker, the leave shows blur and unclear.

Result:

k = 2 Penguins

k = 5 Penguins

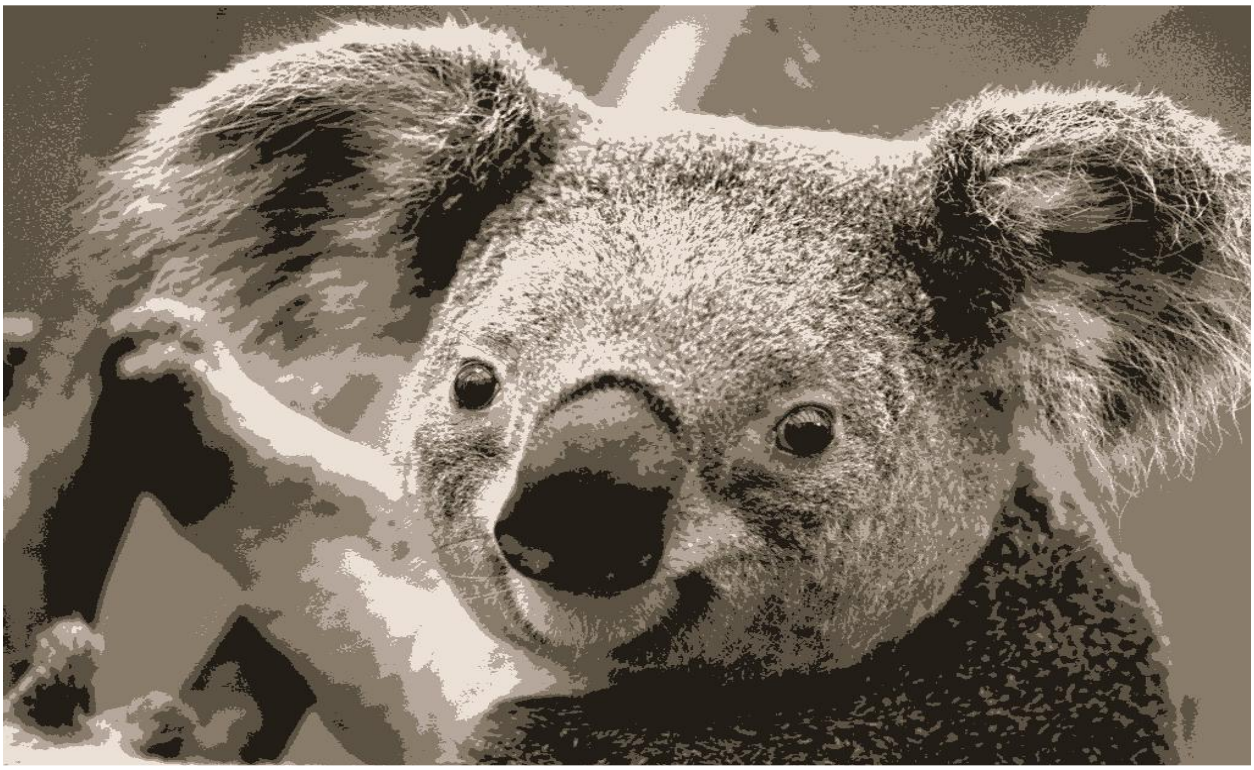
k = 10 Penguins

k = 15 Penguins

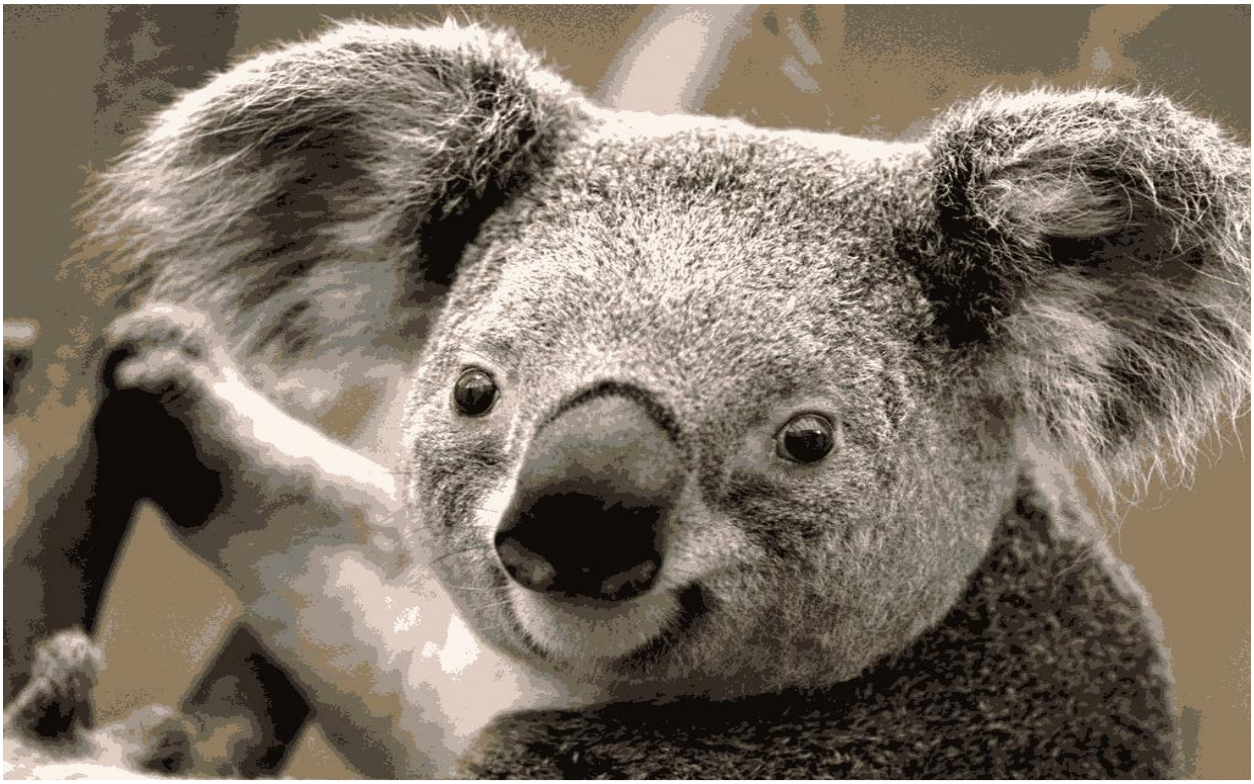
k = 20 Penguins

k = 2 Koala

k = 5 Koala



k = 10 Koala



k = 15 Koala

k = 20 Koala