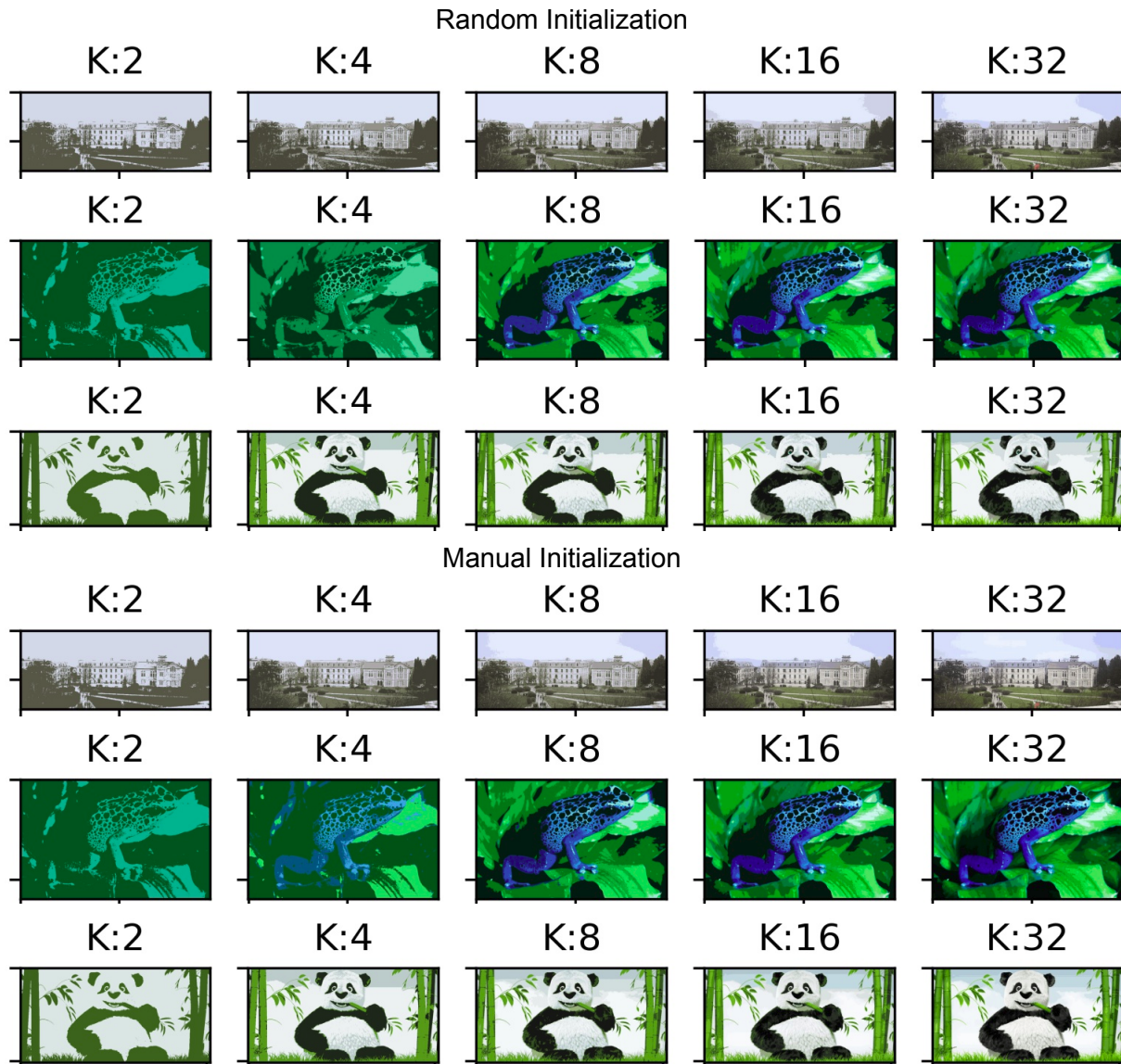


# CmpE537-Computer Vision

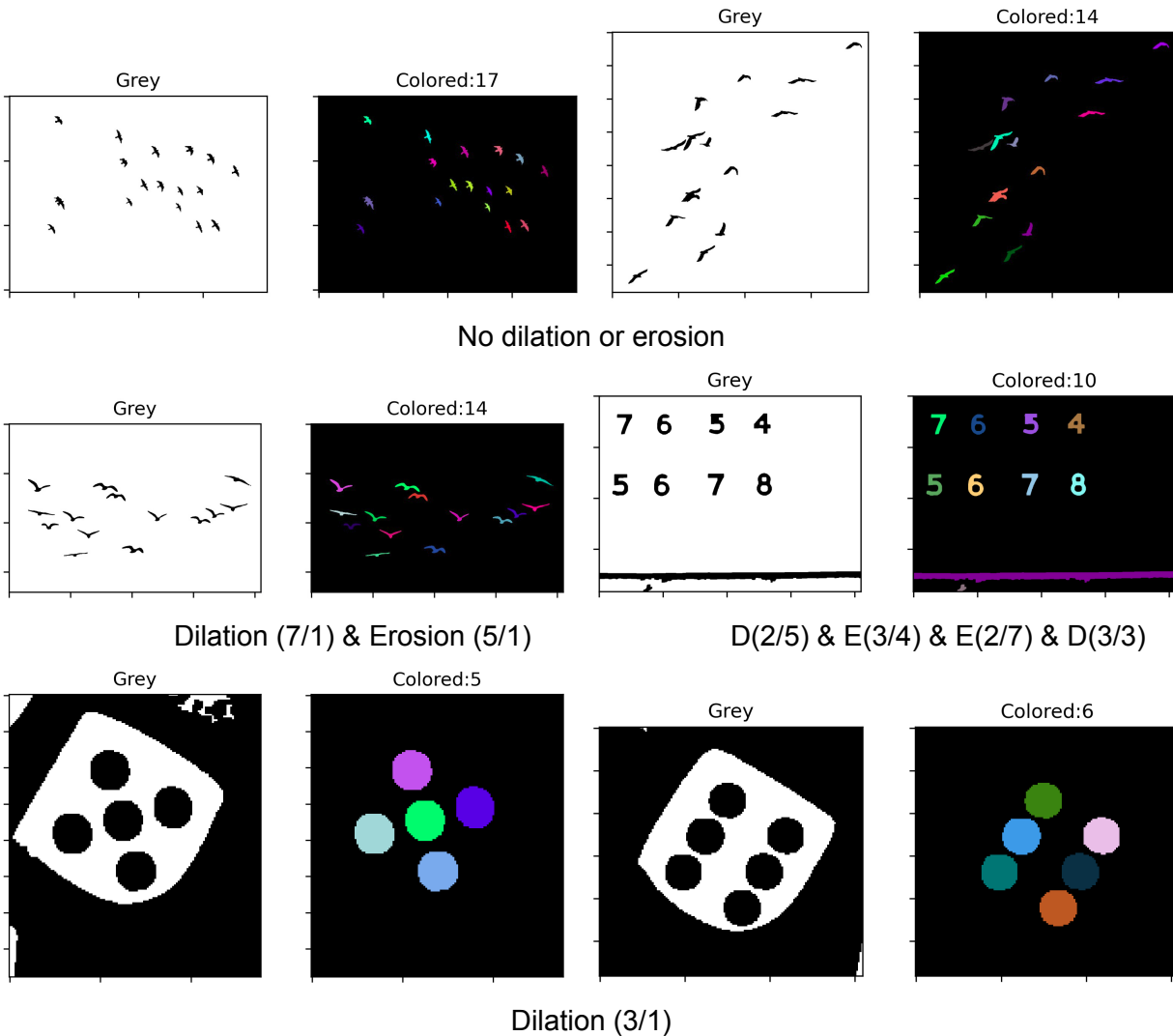
Assignment 1 - Emre Girgin - 2021700060

## Part-1: Color Quantization



- K-means algorithm is run for 10 iterations.
- As the number of clusters increases, the quantization result becomes similar to the original image.
- When the centroids are initialized manually, for the case where the number of centroids is smaller, the result has better color distribution. (ie. check the frog example. When the centroids are initialized randomly, the color of the frog is still green when K=4. However, the frog has more blue in it when the manual initialization is obtained. )
- As the number of centroids gets smaller, the output has less brightness. The reason is, it gets closer to the mean, which is 128.

## Part-2: Connected Component Analysis



PS:

- Colored: X means, there are X connected components are found.
- D(K/I) means, dilation is applied with kernel size KxK and for I iterations. (E for erosion)
- The order of the dilation and erosion operations are applied from left to right.
- [Otsu thresholding](#) is exploited.
- For “dice5.PNG” and “dice6.PNG” the component which is bigger than the 40% of the whole image is ignored and counted as background.

Conclusion:

1. For “birds1.jpg” and “birds2.jpg” the overlapping birds are counted as one. Thus, there is one bird missing for each.
2. For “demo4.PNG” the white part of the bottom line remains after thresholding and morphological operations. This is why there are 10 objects found instead of 8. That part could have been ignored by a spatial thresholding but it was not chosen for the sake of simplicity.