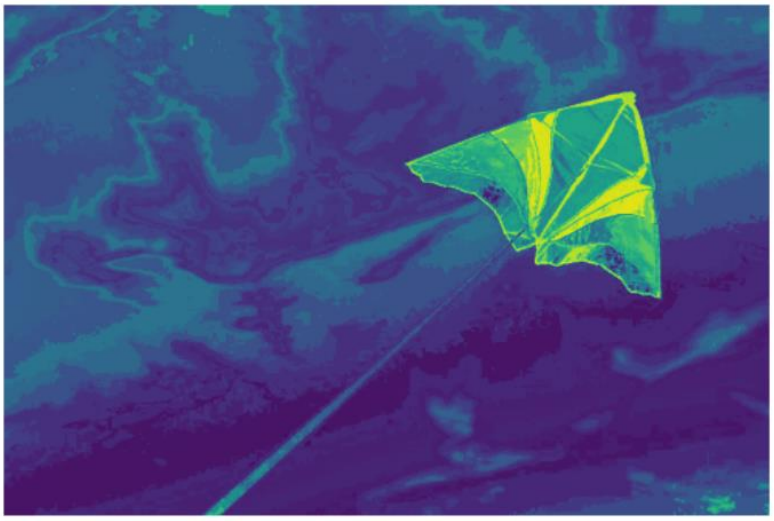
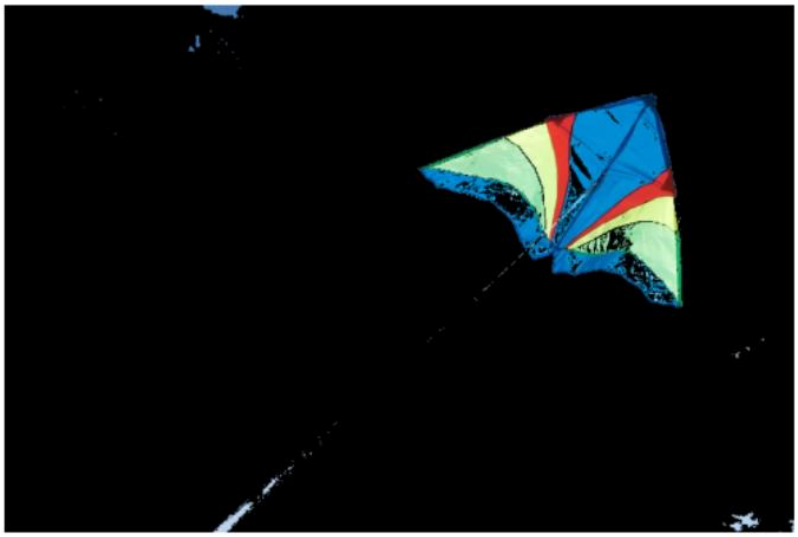
PDF Estimation

by **Rajat Chakraborty**

1. Histogram:

K (number of bins) =32, Threshold=1

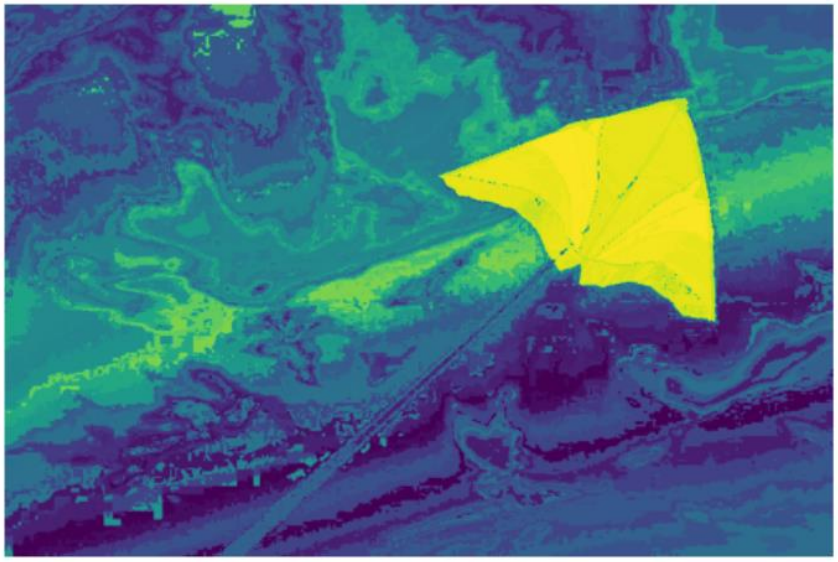




2. Clustering: [

```
kmeans = faiss.Kmeans(128, K, niter=50,nredo=5, verbose=True)
```

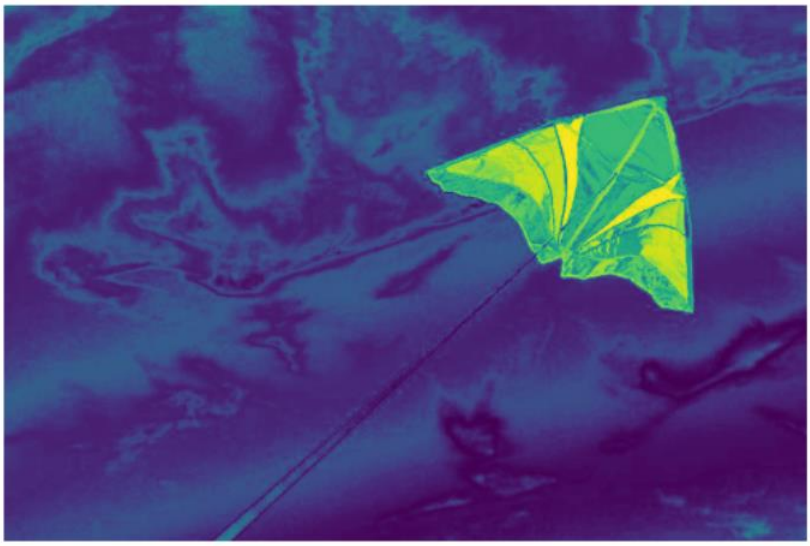
Threshold=1

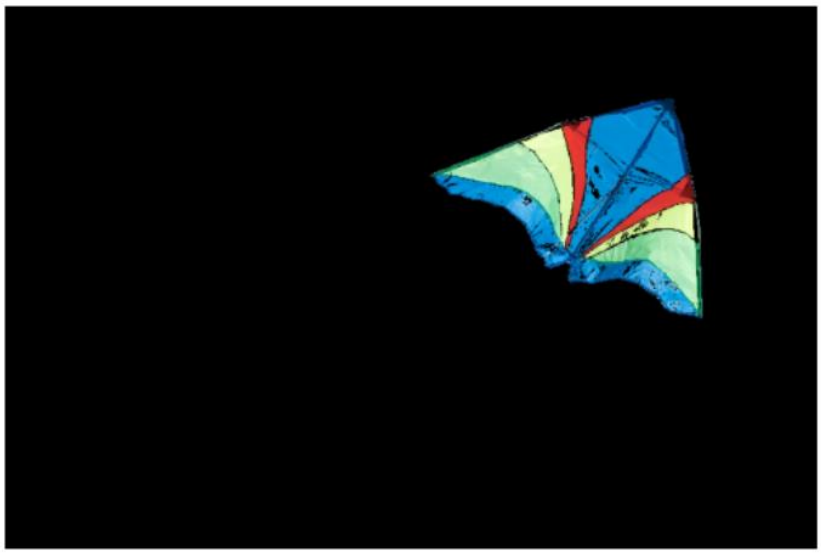


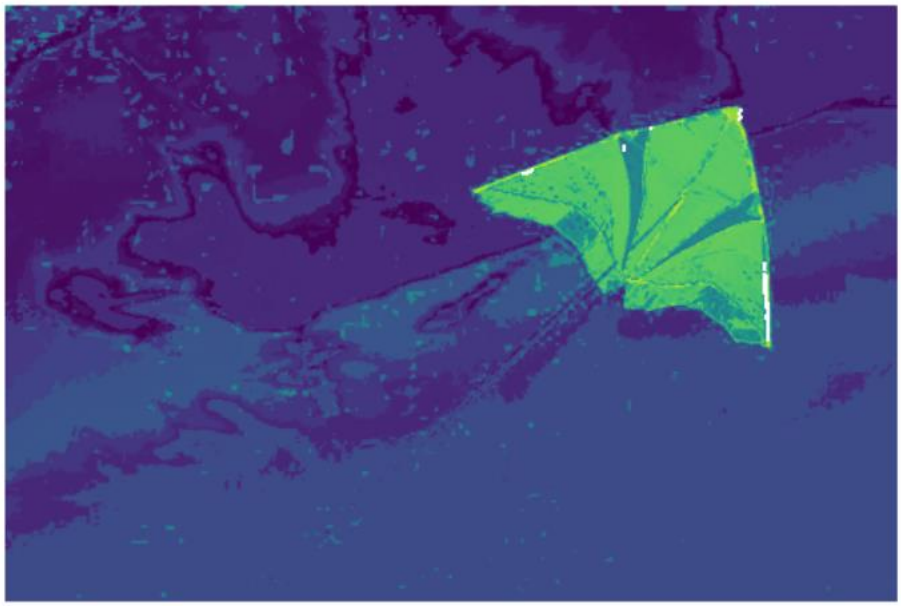
3. Gaussian mixture Model:

```
im_gmm=GaussianMixture(n_components=K, n_init=3, tol=np.std(im_reshaped)/50,covariance_type='diag', max_iter=100)
```

Threshold=1





4. PDFS after using PCA to rotate data

I have retained the same parameter as in 1 (Discrete PDF). I performed PCA fit without changing the dimension to rotate the data along the principal directions. I see a little improvement in the rotated version. However, the change is not very big. This may arise because the object image contains all the color in a substantial proportion.