Assignment 1: Feature extraction and matching

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1 Mean Shift

My implementation of Mean Shift algorithm was just filling the functions given in the skeleton:

- The function distance just computes the distance between the given points and all other points in the set.
 The window is just set to all the points.
- 2. The function gaussian simply computes the weight with the Gaussian kernel function with respect to the distance.
- 3. In update_point we compute the weighted mean for every point with respect to the weights.
- 4. In step we just repeat the above 3 steps for every point in the image and update the image.

After trying with different bandwidths I reached different segmentation results: With bandwidth 1, the code seems to return an IndexOutOfBounds when looking for a color of the label.

Probably there are too many clusters centroids.

The best segmentation is with bandwidth 3.

With bandwidth 5 and 7 there are just too few centroids and part of the image that should be separated are merged in the same segment.

In the next page you can see the results:



Figure 1: Segmentation with $\sigma=3$



Figure 2: Segmentation with $\sigma=5$

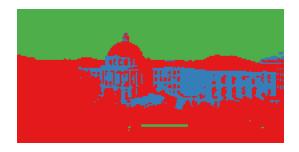


Figure 3: Segmentation with $\sigma = 7$