CS 663: Assignment 3

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Notes and Observations

NOTE: Since none of our team members were able to register in Turnitin, we are attaching our code and (fast to generate images). The published part contains output for parts 1 and part 2. The tuned parameters can also be found in the main script of the published code.

Question 2 (Mean Shift Segmentation)

- We have downsampled the image of *baboon.png* by factor of 4 so as to make each iteration run within 20 secs.
- Also, convergence criterion for our algorithm is when maximum movement (in terms of euclidean distance) of any of the data point in the 5 dimensional space is less than some threshold value (tuned to 0.001).
- Input image range for color values is between 0 and 255 and space values is between 0 and 128
- Note that we have downsampled the image after applying gaussian convolution in the main script and not in the segmentation function
- Also, we have used a custom function to calculate nearest neighbours. We take all points within the constant (tuned to 1) times the bandwidth parameter of given point. `(parameter _weighted_distance between xi, x) < constant.`

Tuned Parameters :-

- Spacial bandwidth -> 35
- Color bandwidth -> 35
- Number of iterations -> 16
- Number of segments after convergence -> 25
- Average time per iteration -> 10 sec