Assignment 2

Mean Shift Basic Implementation

My mean shift implementation is quite straightforward I used torch internal functions to have a implementation as fast as possible. Mostly it’s the defined pipeline, so a function where all the distances are calculated. Then one that calculates the gaussians an then one that multiplies every entry with their according weight and then sums them up.

Mean Shift Batch Implementation

For the batch implementation, I changed the input x to an array of xs with length according to the batch size. The batch size can be set in line 57. The code I used is very similar to the normal iterative approach, I just repeated the original X multiple times to do all the computations in one operation. To add up all points I used the einsum function. This lead to a speedup between 3 and 4.

I ran my code on my GPU: NVIDIA GeForce GTX 1050 Max-Q

Speed differences:

Basic approach:
12.849747657775879

Batch approach (Batch Size 500):
3.4192090034484863