

Assignment 1

(10 points)

Task 1:

- (1) Prepare two images that are fairly similar.
- (2) Draw a histogram of each image in the previous task is somehow the distribution of the image. Plot the histogram of each image.
- (3) Compare the distributions between both images with Kolmogorov-Smirnov, KL-Divergence, and JS-Divergence.

Task 2:

- (1) Create a random dataset in 3D space that has three clusters.
- (2) By using Expectation Maximization algorithms, try to implement Gaussian Mixture Modeling (GMM) clustering algorithm and cluster these data correctly.
- (3) You should visualize at least two E and M steps in between.

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- If you have any trouble during your work, please contact the TA before the deadline. The TA will help you progress in your homework, but she will not provide you with the answer.
 - Late homework delivery results in a penalty on your grade, every late day 10%.
 - Sharing this assignment with a party outside this course is a Boston University code of conduct violation and violators will be reported to the dean for further prosecution.