Spatial Envelop Representation

We have 20 grayscale images in the following folder. Some of the images are those of forests and some are of cities.

Create a simplified spatial envelop representation for the images. Apply k-means clustering (k=2) over the representation and check if the two classes of images are grouped into separate clusters.

Steps to follow:

1. Access the images and show them, just to check if you are working with the correct set of images.
2. For each image
    a. Create DoG and extract edges.
        - You can borrow your own code from programming assignment 1 with appropriate corrections (if needed).
        - Use an appropriate pair of sigmas and window sizes learned from programming assignment 1 for the DoG filter. Experimentation with multiple DoG filters is not needed.
    b. Compute the global edge histogram **(we treat it as a simplified spatial envelop representation)**
        - Keep an entry for “no edge”, i.e. for the image locations where you find no edge.
        - Normalize with respect to image size
        - Each image will be represented by a histogram with five numbers, adding up to 1
3. Observe the four oriented edge orientation maps and the corresponding histograms for a few forest and city images, and comment on the differences observed.
4. Apply k-means clustering algorithm (k=2) on the histograms, and show the images in each cluster separately. Comment on the clustering performance.