Laboratory 4 — Pattern Recognition (EC-416)

Dr. Rajiv Kapoor

February 12, 2021

Overview Take a normal noise free image and compute the:

1. KL Divergence of this noise free image with another noisy image obtained after adding noise to this normal image. (You can add different types of noise like salt and pepper, Gaussian etc.)
2. Plot a graph of how the KL Divergence Changes as the image gets more and more noisy.
3. Also compute the entropy of this normal Image.
4. Also compute entropy of noisy images and plot how entropy changes as more and more noise is added to the image.

Refer Section (1.6) of the book Pattern Recognition and Machine Learning by Bishop.

Data

You can use any standard image from the internet (ideally a HD noise free image). You can even click your own image.

Submission Format

1. You can use either Python 3 or MATLAB/Octave to solve this assignment.
2. This is a programming assignment and nothing needs to be hand written.
3. The code of this assignment must be submitted as a project in a zip file with clear instructions on how to run the main file or it can even be a Jupyter Notebook with clear code + output.