MA5710: Assignment-2

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Instructions :

- Please do not copy. Any sign of copy will lead to zero marks only.
- Submit it as report in a single .pdf file to ma19d200@smail.iitm.ac.in before deadline [**September 13, 2023: 00:01 AM**].
- If you have any doubt clear it in class or write a mail by replying the mail of assignment-2. Except these two options nothing will be entertained.
- **To generate random data for black box model use MATLAB/PYTHON.**

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1. [**10**] Consider the first question [**The number of cherries in a can**] in Assignment-1. Formulate the model as **Black box model**.
   Hints :
   Randomly generate dataset for each of R[**Radius of the can**], r[**Radius of each cherry**]($r < R$) and h[**Height of the can**]. Now predict the number of cherries can be packed using any **Curve fitting method**. Make a table and a plot of the predicted results. Report both upper and lower bounds. **Do not use any result from the White box model**.

2. [**10**] Consider the second question [**Cascading cups**] in Assignment-1. Formulate the model as **Black box model**. **Do not use any result from the White box model**.

3. [**15**] Implement **Linear Isotropic Diffusion** using inbuilt **Gaussian filter** function.
   Hints :
   Use **MATLAB** for coding and appropriate **MATLAB Tool Box**. Take any standard image [Black & White / Color]. Add noise randomly and treat it as input image. Now clean it for different values of σ[**Smoothing parameter**]. Report **PSNR** to understand the quality of cleaning. Make a table and a plot [**Smoothing parameter vs PSNR**].

4. [**15**] Consider the third question in Assignment-2. Formulate the model as **Black box model**. **Do not use any result from the White box model**.