Assignment 5 - Report

## Steps Used:

1. Data Collection:

I collected the data from datasets available online ([Kaggle: Crack Detection Datasets] (<https://www.kaggle.com/search?q=crack+infrared+image)>) and from the internet randomly (keeping in mind the relevance).

1. Pre-processing using Matlab:

I chose 5 crack images and applied the following techniques on them using Matlabs inbuilt functions:

1. Greyscale conversion
2. Gaussian + Median filtering
3. Histogram Equalization
4. Adaptive Thresholding
5. Normalization
6. Image annotation:

Using the MakeSenseAI tool (<https://www.makesense.ai>) I annotated 2 images by following the steps:

1. Go to the website and **“Get Started”**
2. Upload your selected infrared or crack images
3. Choose **“Object Detection”** as the task
4. Create labels: `crack`, `moisture`, `defect`, etc.
5. Draw bounding boxes around damage regions
6. Export annotations in **“YOLO (TXT)”** or **“VOC (XML)”** format

## Observations:

* The contrast of the images was enhanced, and the crack became clearer and more distinguishable.
* Salt-and-pepper noise was reduced without blurring of crack edges.
* Binary masks were prepared for segmentation.