**Assignment 3 Report:-**

**Techniques used in order:-**

1. Grayscaling:- The RGB image was converted into a grayscale image using cvtColor(img,cv2.COLOR\_BGR2GRAY).
2. Exposure Enhancement:- Image’s exposure was changed using

cv2.convertScaleAbs(grey, alpha=expo\_f, beta=0).

With this every pixel is multiplied and added with alpha and beta respectively.

1. Denoise:- The image was denoised was using fastNIMeansDenoising method.

It finds similar image patches and tries to average out them to reduce noise.

1. Image Sharpening:- The denoised image is then sharpened using a sharpening kernel filter=np.array([[0,-1,0],[-1,5,-1], [0,-1,0]])

It sharpens the image details and features.

1. Thresholding:- At last the sharpened image is binary thresholded using cv2.threshold(sharpened,175,255,cv2.THRESH\_BINARY).

It makes sure that pixels that are not in the range of 175 to 255 have their values changed to 0.

**Conclusion:-**

Certain techniques like thresholding, sharpening did a better job in refining images features than other techniques. Overall the image looks more refined with stars being visible.