

IMAGE PROCESSING TERM PROJECT REPORT

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1. INTRODUCTION

This project's goal is to use MATLAB to carry out various image processing operations on the "batu.jpg" image. The project aims to show how edge detection, contrast enhancement, and Gaussian filtering techniques can be used in image processing.

2. TECHNIQUE

The actions listed below were taken to get the desired image processing results:

2.1 Image Loading and Conversion

The *imread* function was used to load the "batu.jpg" picture. To make the subsequent processing steps easier, it was then converted to grayscale using the *rgb2gray* function.

2.2 Enhancement of Contrast

The *histeq* function was used to histogram equalize the grayscale image. By redistributing the pixel intensities, this technique improves the image's contrast.

2.3 Edge Detection

The contrast-enhanced image's edges were found using the Canny edge detection technique. This was accomplished by using the 'Canny' option with the *edge* function.

2.4 Gaussian Filtering

The edge-detected image was subjected to a Gaussian filter in order to reduce noise and smooth the edges. To create the desired blurring effect, the *imgaussfilt* function was used with the right standard deviation and filter size.

3. RESULTS

The files in the "Images" folder show the outcomes of the image processing operations:

Figure 1: Original Photograph

Figure 2: Histogram equalization and contrast enhancement

Figure 3: Canny Edge Detection

Figure 4: Blurring due to Gaussian filtering

The improved contrast, edge detection, and smoothed appearance attained through the use of image processing techniques are demonstrated in the processed images.

4. CONCLUSION

In this project, the "batu.jpg" image was successfully subjected to a number of image processing operations using MATLAB, including contrast enhancement, edge detection, and Gaussian filtering. The outcomes show how these methods are effective at enhancing image quality, spotting edges, and lowering noise.

5. COULD BE USED FOR UPCOMING WORK

Future research can investigate additional improvements and optimizations. To accomplish certain goals, this may entail adjusting the parameters of the image processing operations, researching various edge detection algorithms, or applying additional processing methods.