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POINT DETECTION IN PRE-PROCESSING

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ABSTRACT

A high-quality image has a higher recognition or classification rate than noisy images that have not been processed. Extracting features from such unprocessed images is more difficult, which decreases the object recognition or classification rate. Pre-processing is usually done before extracting features from an image to overcome issues caused by the low image quality. Smoothing and contrast stretching are proposed as image pre-processing methods in our study. Image segmentation is one of the many image processing techniques that are used to evaluate a given image. Image segmentation is the fundamental step to analyse and extract data from images. This paper discusses the fundamental principles of image segmentation methods. In image analysis and computer vision, segmentation techniques we processed point detection, to find the difference between pre-processing techniques.

Keywords: smoothing, contrast stretching, point detection, pre-processing, segmentation.

1. INTRODUCTION

Images are one of the most essential media for delivering information, and in the subject of computer vision, the information retrieved from them can be used for other tasks by interpreting them. An image is a representation of visual perception in a two-dimensional or three-dimensional picture that has a comparable appearance to some subject, originating from the Latin word 'imago.' A digital image is a two-dimensional image that is represented numerically. A digital image is made up of a finite number of elements called picture elements, image elements, pels, and pixels, each of which has a unique location and value. Pixels are the tiniest individual elements in an image, containing finite, discrete, quantized values that represent brightness, intensity, or grey level at any specific point. There are two sorts of images in general: raster and vector. Raster images are two-dimensional arrays with a finite set of digital values that are represented in a definite number of rows and columns of pixels. Raster pictures are the most common term for digital images. Vector images are images created using the mathematical geometry of vectors, which contain points with both magnitude and direction.

The current section provides an overview of the image; the next section discusses pre-processing; the third section discusses segmentation; the fourth section discusses various image pre-processing techniques; the next section discusses coding, and the final section provides a brief summary of the entire document.

2. METHODOLOGY

2.1 Pre-processing:

The primary goal of the pre-processing step is to determine the image's area of focus. Given that the input image may contain some noise, it is important to decrease or eliminate the noise. Pre-processing is critical due to noisy, inconsistent, and incomplete data. It is one of the preliminary processes that must be completed in order to achieve high step precision.

Pre-processing an image is required in order for programs to function properly and produce the desired results. The goal of pre-processing is to improve the image's quality so that we can better analyze it.

Contrast stretching and smoothing are classified as pre-processing in this paper to reduce noise.

2.2 Segmentation:

The core of object recognition and computer vision is image segmentation. Image segmentation is the process of splitting a digital image into several regions or objects, each of which is made up of sets of pixels with similar features or attributes that are labelled differently to represent different regions or objects. The purpose of segmentation is to make an image more understandable and easier to evaluate by simplifying and/or changing its representation. Image segmentation is a technique for identifying objects and edges in images. The pixel values are segmented based on their similarity and discontinuity.

Image segmentation is a technique and analysis used in digital image processing to divide an image into multiple sections, frequently based on the characteristics of the pixels in the image. Image segmentation is the process of separating foreground and background pixels, or clustering pixels based on colour or shape similarity.

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3. MODELING AND ANALYSIS

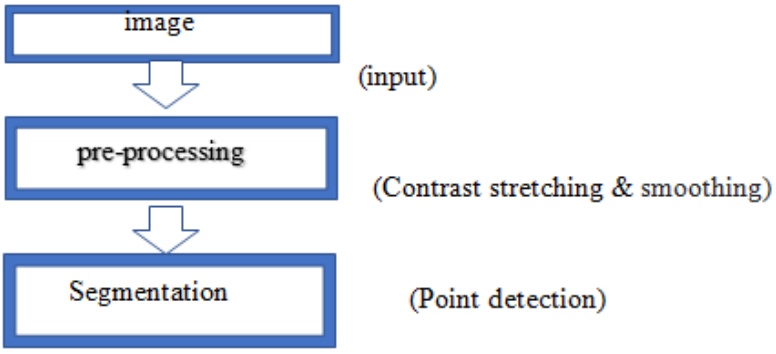
3.1 Preprocessing (smoothing):

Smoothing is frequently used to reduce image noise. Image smoothing is a significant image improvement tool for removing noise from images. As a result, it is an essential functional module in a variety of image pre-processing applications. Image smoothing is a technique for enhancing image quality. Noise reduction and blurring operations are done with smoothing filters. It considers the pixels in its immediate vicinity while determining a more accurate version of this pixel. Extremely "noisy" pixels can be filtered away by taking nearby pixels into account. Extreme pixels, unfortunately, might also represent original fine details that are lost during the smoothing process.

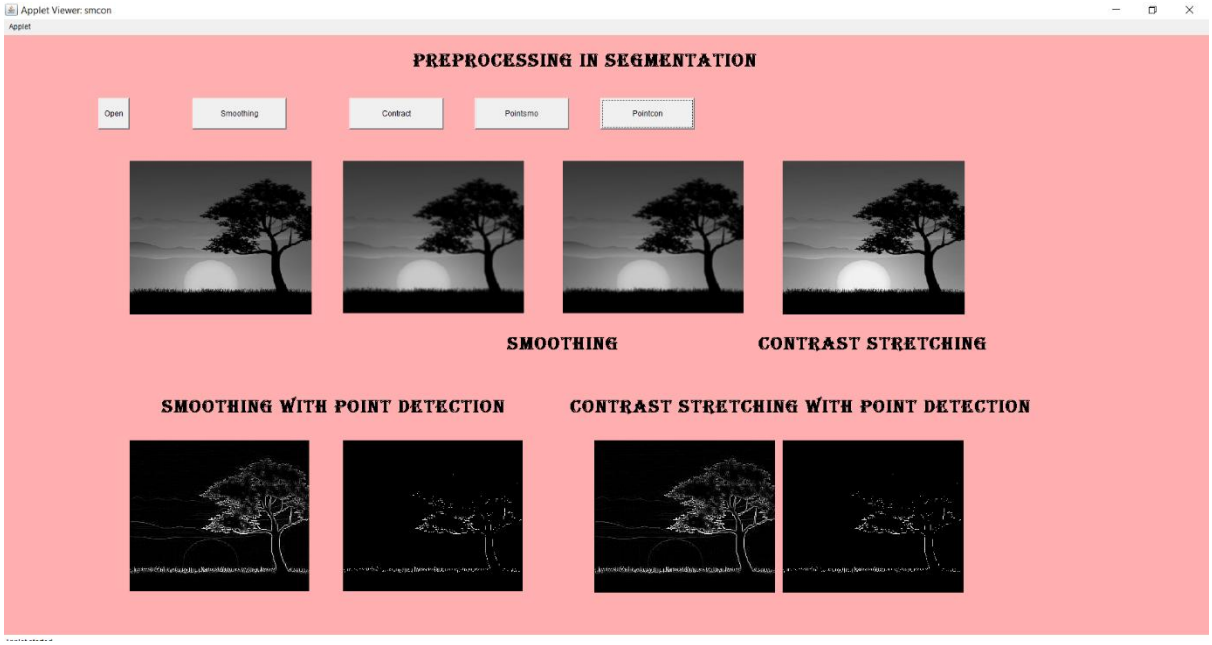
3.2 Preprocessing (Contrast stretching):

Contrast stretching is a simple image enhancement technique that seeks to improve contrast in an image by 'stretching the range of intensity values it contains to span a desired range of values, typically the full range of pixel values allowed by the image type in concern.

A flow diagram is given below,



4. RESULTS AND DISCUSSION



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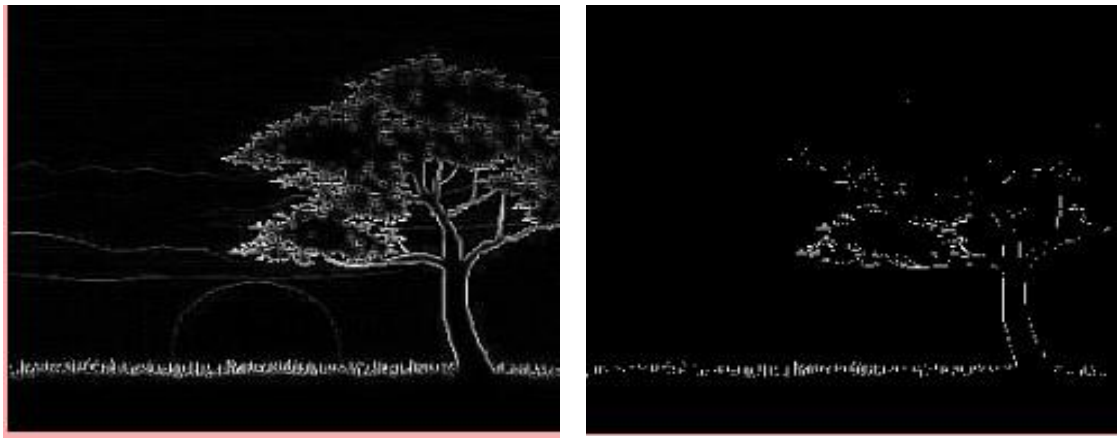
smoothing in point detection



Contrast stretching in point detection

The first image is the input image, the second and third image is smoothing image, the fourth image is the contrast stretching image, Bottom images are the output image for point detection in smoothing and contrast stretching images, In this, we can find what is difference between different pre-processing techniques.

5. CONCLUSION

In overall, this paper presented the structure of digital image processing and the different techniques for the image Pre-processing. The present paper discussed the noise reducing techniques during the image Pre-processing. And after that segmentation technique is processed. To find the difference between pre-processing techniques.

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