IMAGE PROCESSING IN JAVA

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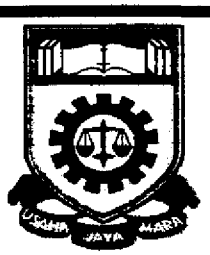

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Abstract

The purpose of this project is to develop an image processing program using Java programming language. The focus is mainly on image enhancement process by using edge detection. The edge detection operator used is the Sobel operator. The Java interpreter used to develop the software is the Java Development Kit (JDK). This software can be used on any platform as long as it supports the Java environment. The entire presentation will be structured around a hierarchy of concepts of image processing starting from defining the terms of image, edge detection, and Java programming language. The results obtained are satisfactory and the program can be utilised in simple edge detection application.

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CHAPTER 1

1.0 INTRODUCTION

Images occur in various forms, some visible and others not, some abstract and others physical, some suitable for computer analysis and others not. It is thus important to have an awareness of the different types of images. A lack of this awareness can lead to considerable confusion, particularly when people are communicating ideas about images when they have different concepts of what an image is.

The physical images are actual distributions of matter or energy. For example, optical images are spatial distributions of light intensity. These can be seen by the human eye and are thus visible images as well. Examples of nonvisible physical images are temperature, pressure, elevation and population density maps. A subset of the physical images is multispectral images - those having more than one local property defined at each point. An example is the trispectral (red, green, blue) image, as it is reproduced in color photography and color television practice. Whereas the black-and-white image has one value of brightness at each point, the color image has three values of brightness, one each for red, green and blue. The three values represent intensity in different spectral bands, which the eye perceives as different colors.

Another subset of images contains the abstract images of mathematics, which consists of the continuous functions and the discrete functions, or digital images. Only the digital images can be processed by computer.