

CHAPTER I

INTRODUCTION

1.1 Background

The Sobel operator is used in image processing, particularly within edge detection algorithms. Technically, it is a discrete differentiation operator, computing an approximation of the gradient of the image intensity function. At each point in the image, the result of the Sobel operator is either the corresponding gradient vector or the norm of this vector. The Sobel operator is based on convolving the image with a small, separable, and integer valued filter in horizontal and vertical direction and is therefore relatively inexpensive in terms of computations. On the other hand, the gradient approximation that it produces is relatively crude, in particular for high frequency variations in the image.¹

In this case, writer makes sobel in two types there are matrix 3x3 and 5x5. This program was made to compare the differences result of sobel with template matrix 3x3 and 5x5.

1.2 Scope

This project created with Java language programming and using matrix as data struktur to store pixel values and use Edges Detections as algorithm. Problem limitation in this project are :

1. No small number of pixels
2. The difficulty of determining the coordinates using that for edges detections
3. Just can process with fix size. Example : 600x600 or 1200x1200 or 100x100, etc.

1.3 Objective

The project is created using Java and use Edges Detections as algorithm. The Sobel edges detections using two template namely 3x3 and 5x5.

The purpose of this program is to better understand the differences Sobel edges detections using tmplate 3x3 and 5x5, and better understand the process of detection of edges detections.

1 http://en.wikipedia.org/wiki/Sobel_operator