

Selected Readings in
**COMPUTING AND
TELECOMMUNICATIONS**

Editors
Mira Kartiwi
Teddy Surya Gunawan
Aisha Hassan Abdalla Hashim



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14. PARALLEL ALGORITHMS FOR EDGE DETECTION ON CLUSTER COMPUTER

Teddy Surya Gunawan and Elkabir Ansoya Bacar

ABSTRACT

In this paper, we talked about Parallel Algorithms for Edge Detection on Cluster Computer. Here we are going to use Sobel operator, Canny, Laplacian, Prewitt, Roberts, and Zero cross operator. By doing so, we focused on two parts. The first part is using cluster by increasing the number of processors in order to get a very high speed in a short time, in contrast with processing in one core (serial). Besides that, it allows us to process any problem easily and that comes from divide the problem into some parts according to how many processors or cores we use. Basically, cluster consists of two things hardware and software where we showed the steps to set up cluster and how we can use. The second part of this document is using the six techniques or algorithms. and for my case, I am going to do the edge detection using Sobel, Laplacian and Canny operators and my partner is going to the remaining three algorithms in order to obtain edge of image which it is known as edge detection by utilizing fast technology 'cluster' as application, then we have analyzed the performance of the algorithms to emphasize the best technique and the advantage of using cluster in term of quality and good detection.

14.1 INTRODUCTION

Traditionally, computer software has been written for serial computation. To solve a problem, an algorithm is constructed and implemented as a serial stream of instructions. These instructions are executed on a central processing unit on one computer. Only one instruction may execute at a