THE ENHANCEMENT OF MAMMOGRAPHIC IMAGES OF BREAST CANCER USING MEDIAN FILTERING (SOFTWARE DEVELOPMENT)

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ABSTRACT

Development of Computer Graphics and Image Processing techniques are becoming increasingly common in many application areas related to scientific engineering and medical fields. To efficiently visualise any inherent structure or spatial relationship that may exist in the image data, a user must have the ability to enhance, manipulate and display the image data.

In this project, the development of median filtering algorithm were used to improve the quality of mammography images, hence this image can be used to determined and to detect any abnormalities in the image. These algorithm are written in C code using BORLAND C++ in Windows environment , improvise the poor image to become a clear image using enhancement techniques. One effective use of median filters has been the reduction of high-frequency and impulsive noise in digital images without the extensive blurring and edge destruction associated with linear filters[5]. In addition to the enhancement technique , the edge enhancement and detection using Sobel and Kirsh operators were used . The graphics files format used are PCX (PC Paintbrush file format) and BMP (Windows' bitmap).

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CHAPTER 1

INTRODUCTION

1.1 Background

Breast cancer is the most common form of malignant disease in women[3]. Based on the paper " Toward the automated pre-screening of breast x-rays" , United Kingdom (UK) has the highest breast cancer mortality rate in the world, with 24,500 women being diagnosed every year as having breast cancer, and two-thirds of those eventually die from it[1]. Breast cancer incidence begins at 10 per 100,000 for women under 30 to 150 per 100,000 for women aged 65 [1].

The chance of breast cancer based on age and breast cancer risk profile, and the accuracy of screening mammography influence the sensitivity of mammographic image [7]. The accuracy of a test is measured by determining the sensitivity and specificity. From the paper " Likelihood Ratios for Modern Screening Mammography : Risk of Breast Cancer Based on Age and Mammographic Interpretation " by Karla Kerlokowske et al ; the sensitivity of screening mammography increased with age, where 77.3% for ages 30 to 39 years , 86.7% for ages 40 to 49 years, 93.6% for ages 50 to 59 years, 94.1% for ages 60 to 69 years, and 91.2% for ages 70 years and above. The factor of breast size ; fatty breast for young women compared to women aged 40 to 49 effects the accuracy of mammography.