UNIVERSITI TEKNOLOGI MARA

ENHANCEMENT OF DNA GEL IMAGES

CT MUNNIRAH NIESHA BINTI MOHD SHAFEE

Dissertation submitted in partial fulfillment of the requirement

for the degree of

Master of Science (Computer Science)

Faculty of Computer and Mathematical Sciences

July 2013

ABSTRACT

Image enhancement is to process an image so that result is more suitable than the original image for specific application. The objective of enhancing the image is to improve the image standard or the image quality from the original one. DNA gel image is one of the digital medical images prove to be corrupted by some degree of noise due to the presence of corruption present in transmission and acquisition by many effect. This type of image need to be enhanced before it can be used for analysis or image diagnosis. This paper compares three different techniques of image enhancement which are used to enhance the DNA gel images namely Enhancement of DNA Gel Image using Thresholding, Shifting, and Filtering Techniques or Method 1, Enhancement of DNA Gel Image using Background Subtraction Technique or Method 2, and Enhancement of DNA Gel Image using Improved Background Subtraction Method or Method 3. The evaluation of the result is done based on the calculation result of Peak Signal to Noise Ratio (PSNR) value. The experimental results shows that the third method of image enhancement is a better method to be applied as it shows a higher PSNR value compared to the other which means it improves the image better.

Keywords: Image enhancement, DNA gel image, techniques of image enhancement, PSNR

ACKNOWLEDGEMENT

First of all, all praises and thanks to Allah, Lord Al-Mighty, for His guidance and will, for the revelation of some of His knowledge to me during the completion of this research dissertation.

Lots of thanks to my beloved mother who never stop in giving me full support, understanding and courage throughout the research dissertation without hassle. Thanks also to my lovely family and special friends for always supporting me.

This research dissertation would not be possible and successful without the help and support from my supervisor, Assoc. Prof. Dr. Nursuriati Jamil and countless of appreciation to her for giving instructions, advices, motivation, support and guidance throughout the completing this research dissertation.

Finally, a deepest gratitude goes to my course colleagues of CS777 for their help and also to other whose have, in one way or others, given me invaluable help, assistance and advice. And to all the friends for the cooperation they gave to me. Last but not least, to the seniors who have shared their knowledge. Thank you very much.

TABLE OF CONTENTS