

**Brain Abnormality Segmentation  
Using k-Nearest Neighbour (k-NN)**

**BY**

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**THESIS SUBMITTED IN PARTIAL FULFILLMENT OF  
THE REQUIREMENT FOR THE DEGREE OF  
BACHELOR OF COMPUTER SCIENCE**

**FACULTY OF COMPUTER AND MATHEMATICAL  
SCIENCES**

**UNIVERSITI TEKNOLOGI MARA**

**NOV 2010**

# ACKNOWLEDGEMENT

*In the name of ALLAH*

*The most gracious and the most Merciful*

First of all, I would like to express my gratitude to Allah S.W.T because without His permission I would not have the chance to complete my final year project. The completion of this research is through relentless cooperation of several persons in giving me guidance.

My greatest appreciation goes to my supervisor, Dr. Noor Elaiza Binti Abd. Khalid. She has given me such as good idea, comment to improve my report and opened my minds to what is currently required in this research with her strong knowledge to this research. Without her endless advice and support, I would not have completed this final year project.

I want to take this opportunity to express my thanks to my lecturer of CSC 699 (Final Year Research Project) and CSC 598 (Project Formulation), Dr. Fakhrol Hazman Yusoff and Dr. Noor Elaiza Binti Abd. Khalid, who have been tolerant and patient in guiding me in efforts to complete this project paper.

Lastly, to my beloved parents and supportive family, I am so grateful to them for always being there for me. Thank You.

## ABSTRACT

This study uses k-Nearest Neighbour (k-NN) in segmentation of brain abnormality. Segmentation is a process of partitioning a digital image into multiple regions or set of pixels. The goal of segmentation is to simplify and/or change the representation of an image into something that is more meaningful and easier to analyze. Segmentation of MRI image is an important part of brain imaging research. In this study, k-NN segmentation uses 150 images as testing data to test this prototype. These data are designed by cutting various shapes and size of various abnormalities and pasting it onto normal brain size which are has various category of background such as low, medium and high background gray level value. The experimental results show the good segmentation for medium and low background grey level value for light abnormality. Dark abnormality for each type of background also produced good segmentation. However, high background gray level value for light abnormality produced poor segmentation because texture of background and light abnormality seen like same. In the future, this project needs to use other techniques to produce accuracy result for light and dark abnormality even k-NN segmentation produced good segmentation.

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# CHAPTER 1

## INTRODUCTION

### 1.1 Background

Human have extraordinarily large and complex brains. The brain is the part of the central nervous system (CNS). It is the centre to control the mental processes and physical action of a human being. Central nervous system is composed of neurons, blood vessels, and glial cells (supporting cells of the CNS). The gray matter of the CNS contains most of the neuron cell bodies, while the white matter of the CNS contains the axons. Figure 1.1 shows major part of human brain.

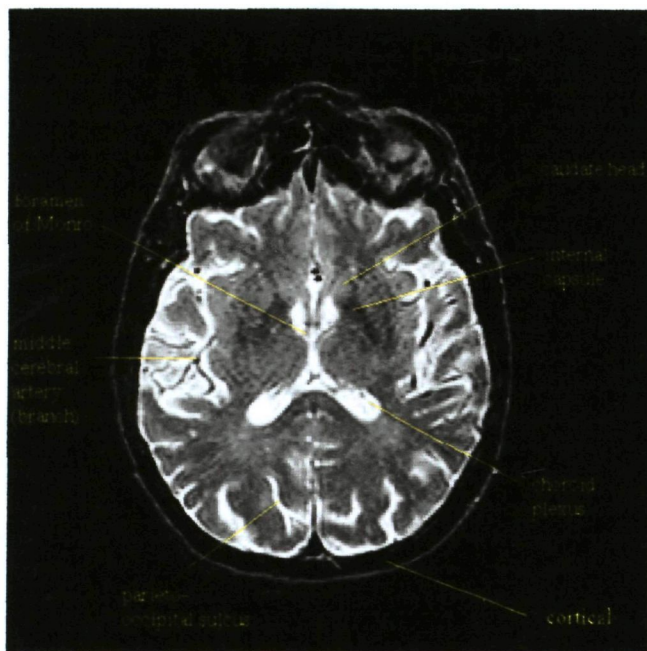


Figure 1.1: Major part of the human brain.