UNIVERSITI TEKNOLOGI MARA

IMAGE FEATURE EXTRACTION
FOR COLORECTAL CANCER
CELLS CLASSIFICATION

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of the requirement for the degree of
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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulation of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Manual screening of colorectal biopsy tissue under microscope to conform the presence of cancerous cell is difficult, arduous and time consuming. The criteria in diagnosing colorectal cancer cell are gland shape and nucleus size. In this study, we proposed a method of image pre-processing to extract the important feature of colorectal tissue images. Images captured under microscope may vary in colour brightness due to different H&E stain concentration and the size of biopsy tissue. To overcome this problem a method using HSV colour model to remove element outside the area of nucleus is used. A novel method named Pixel Mask Analyzer is proposed to clean the image and remove noises. Meanwhile, the gland boundary tracking and segmentation is proposed to extract the gland shape. By using the result of gland tracking, nucleus size that forms the glands are measured. By combining result of gland shapes and nucleus size, the image classification is performed. The result shows that classification achieves 96.9% accuracy by using the proposed methods. With the high accuracy results and findings of this study, it is hope that the study can contribute a very substantial amount of outcomes that would greatly benefit the research areas especially in image processing and classification of colorectal cancer.
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# TABLE OF CONTENTS

**AUTHOR'S DECLARATION**

**ABSTRACT**

**ACKNOWLEDGEMENT**

**TABLE OF CONTENTS**

**LIST OF TABLES**

**LIST OF FIGURES**

## CHAPTER ONE: INTRODUCTION

1.1 Background

1.2 Statement of the Problem

1.3 Research Objectives

1.4 Scope of the Study

1.5 Significance of the Study

1.6 Overview of Research Methodology

1.7 Limitation of Study

1.8 Overview of the Thesis

## CHAPTER TWO: REVIEW OF LITERATURE

2.1 Colon

2.2 What is Cancer?

2.3 Colorectal Cancer

2.3.1 Conventional Screening Process

2.3.2 Normal Colon Cells

2.3.3 Adenoma in Colon

2.3.4 Adenocarcinoma

2.4 Image Processing

2.4.1 Noise

2.4.2 Noise Removal

2.4.2.1 Salt and Pepper Noise Removal Using kFill Algorithm

2.4.2.2 Mean Filter