

UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

**MULTIREGION SEGMENTATION OF MAMMOGRAM
IMAGES BY USING PARAMETRIC KERNEL GRAPH CUT
ALGORITHM**

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS	ii
TABLE OF CONTENTS	iii
LIST OF TABLES	v
LIST OF FIGURES	vi
ABSTRACT	vii
CHAPTER 1 : INTRODUCTION	1
1.1 Overview	1
1.2 Motivation	1
1.3 Problem Statement	2
1.4 Objectives	3
1.5 Significance and Benefit of the Project	3
1.6 Scope and Limitations of the Project	4
1.7 Definition of Terms and Abbreviations	5
CHAPTER 2 : BACKGROUND THEORY AND LITERATURE REVIEW	6
2.1 Overview	6
2.2 Image Segmentation.....	6
2.3 Parametric Kernel Graph Cut Algorithm	7
2.4 Application of Graph Cut.....	10
2.5 Mathematical Preliminary of Parametric Kernel Graph Cut	16
CHAPTER 3 : METHODOLOGY AND IMPLEMENTATION	20
3.1 Overview	20
3.2 Phase 1: Data Acquisition.....	21
3.3 Phase 2: K-Mean Clustering.....	22
3.4 Phase 3: Image Segmentation by Using Parametric Kernel Graph Cut.....	30
3.5 Phase 3: Performance Evaluation of Segmentation Results	46
3.5.1 Dice and Jaccard Coefficient.....	46
3.5.2 Accuracy.....	48
3.5.3 Sensitivity	50

CHAPTER 4 : RESULTS AND DISCUSSION	52
4.1 Overview.....	52
4.2 Segmentation Result of Microcalcification by using PKGC Method.....	52
4.2.1 Parameter Analysis of Parametric Kernel Graph Cut.....	55
4.3 Performance Evaluation.....	59
4.3.1 Dice and Jaccard Coefficient.....	59
4.3.2 Accuracy.....	61
4.3.3 Sensitivity.....	64
CHAPTER 5 : CONCLUSION AND RECOMMENDATIONS	66
5.1 Overview.....	66
5.2 Conclusion	66
5.3 Recommendations.....	67
REFERENCES.....	68
APPENDICES	72
APPENDIX A: Source Code of PKGC Implemented in MATLAB R2014a.....	72
APPENDIX B: Successful Segmentation Results by Using PKGC	78
APPENDIX C: Another 10 Samples of Parameters Used in PKGC	82

ABSTRACT

Image segmentation is a crucial stage in image analysis. The role of segmentation technique is to partition an image into meaningful regions. Many methods are widely applied for image segmentation. However, several methods are faced with common issues, such as sensitivity to the noise and not robust in practices. Therefore, Parametric Kernel Graph Cut Algorithm was used in this study. Parametric Kernel Graph Cut Algorithm is an improvisation of the original Graph Cut. Parametric Kernel Graph Cut Algorithm has overcome these common issues by using the kernel trick instead of using different kinds of model in segmenting any images. In this study, the microcalcification from 25 mammogram images were extracted, whereby all the microcalcification were already confirmed by the radiologist. The performances of this method were measured based on Dice and Jaccard coefficient and also the accuracy and sensitivity by using percentage relative error of the area between method and expert. All the experimental results generated the outstanding results, where all images produced the average of 91.67% for Dice coefficient and 84.72% for Jaccard coefficient. Meanwhile both accuracy and sensitivity results acquired 97.84% and 96%, respectively. Therefore, Parametric Kernel Graph Cut Algorithm had proved its ability to segment the microcalcification robustly and efficiently.