

## TABLE OF CONTENTS

ABSTRACT .....	iii
DEDICATIONS .....	iv
ACKNOWLEDGEMENTS .....	v
TABLE OF CONTENTS .....	1
TABEL OF FIGURES .....	3
TABLE OF TABLES .....	4
CHAPTER 1: THE PROBLEM .....	5
1.1 Rationale .....	5
1.2 Theoretical Framework .....	6
1.3 Conceptual Framework/Paradigm .....	6
1.4 Problem Statement .....	7
1.5 Hypothesis .....	8
1.6 Assumption .....	8
1.7 Scope and Limitation .....	8
1.8 Importance of the study .....	8
CHAPTER 2: REVIEW OF LITERATURE AND STUDIES .....	9
2.1 Related Literature .....	9
2.2 Related Studies .....	10
2.2.1 LBP (Local Binary Pattern) .....	10
2.2.2 VLBP (Volume Local Binary Pattern) .....	11
2.2.3 Color Look Up Table .....	12
CHAPTER 3: Research Design .....	14
3.1 Fire Detection System .....	14
3.1.1 LBP-TOP (LBP-Three Orthogonal Plane) .....	15
3.1.2 Modified LBP Rules .....	17
3.2 Research Method Explanation .....	18
3.2.1 Training Process .....	19
3.2.2 Testing Stage .....	22
3.2.2.1 Testing process for LBP-TOP .....	22
3.2.2.2 Testing process for Fire Detection System .....	23
3.3 Video Data .....	24
CHAPTER 4: EXPERIMENT AND ANALYSIS .....	26

4.1	Traning Process Result .....	26
4.1.1	Frame Sampling and Neighbor Point Effect to Clustering Model and Processing Time .....	26
4.1.2	Threshold Values Effect to Clustering Model Accuracy .....	28
4.2	LPB-TOP testing result evaluation.....	29
4.2.1	Complexity analysis of LBP-TOP.....	30
4.3	Fire Detection System Result. ....	32
CHAPTER 5: CONCLUSION AND RECOMENDATION .....		36
5.1	Conclusion.....	36
5.2	Recomendation .....	36
BIBLIOGRAPHY .....		37
APPENDIX 1 .....		39
APPENDIX 2 .....		47
APPENDIX 3 .....		50
CURRICULUM VITAE .....		54