



FINAL YEAR PROJECT REPORT

**TRAFFIC CONGESTION RESOLUTION AND ROAD
PLANNING**

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TRAFFIC CONGESTION RESOLUTION AND ROAD PLANNING

ABSTRACT

In this project we perform classification of Vehicles in surveillance videos on three different datasets with varying level of complexity. First Dataset (Highway II) contains single lane, high speed vehicles, no vehicle occlusion, long shadows and the camera angle is top front view. Second Dataset (Toolplaza) contains two lanes, slow speed vehicles, varying vehicle type, long shadows and the camera angle is top front view. Third Dataset (Nipa) contains three lanes, high speed vehicles, varying vehicle type, no shadows and the camera angle is top side view. Existing algorithms such as blob analysis, tracking using kalman filter, detection line techniques were used and tested on all 3 data sets and experimental results for detection, tracking and attribute based classification are presented at the end. Results show that the algorithms perform well for simple datasets but as soon as the complexity increased, several tracking and classification errors were identified. Major Contribution of errors was because of occlusion due to shadows and occlusion due to camera angles.

Moreover, this report provides information about different image processing algorithms which are implemented on Xilinx FPGA model Virtex4 using an efficient tool known as Xilinx System Generator for MATLAB. All the image processing algorithms including image inversion, contrast sketching, Sobel edge detection, Boundary extraction etc are explained in this report. Using the Hardware co-simulation function given in the System Generator we are able to implement these algorithms on the Virtex 4. Using System Generator reduces complexity and intricacy in the design.

TABLE OF CONTENTS

DECLARATION	Error! Bookmark not defined.
APPROVAL FOR SUBMISSION	2
ACKNOWLEDGEMENTS	4
ABSTRACT	5
TABLE OF CONTENTS	6
LIST OF TABLES	9
LIST OF FIGURES	10

CHAPTER

1	INTRODUCTION	11
	1.1 Background	11
	1.1.1 What Is Traffic Congestion	11
	1.1.2 What is Road Planning	11
	1.2 Problem Statements	12
	1.2.1 Old Methods	12
	1.2.2 Some Reasons Of Traffic Congestion	12
	1.3 Aims and Objectives	13
	1.4 Scope of Project	13
2	LITERATURE REVIEW	14
	2.1 Introduction To Matlab	14
	2.1.1 Relation Of Computer Vision With Different Fiel	14
	2.1.2 The Advantages Of Matlab Over Other Languages	14
	2.1.3 Image Representation In Matlab	15
	2.1.4 Image Processing Techniques	16

2.2	Introduction To Fpga	19
2.2.1	Field Programmable Gate Array	20
2.2.2	Architecture Of Field Programmable Gate Array	20
2.2.3	History Of Field Programmable Gate Array	20
2.2.4	Fpga Comparisons	21
2.2.5	Applications	21
3	DESIGN AND METHODOLOGY	24
3.1	Detection and tracking of vehicles	24
3.2	Area based classification of vehicles	24
3.1	Detection and tracking of vehicles	24
3.2	Stored video processing on MATLAB	25
3.2.1	Problem Formulation:	25
3.2.2	Algorithms:	25
3.3	Implementing the offline video processing on FPGA	31
	Figure 3.5: Implementing the offline video processing on FPGA	31
3.5.1	Image inversion:	32
3.5.1.1	Image enhancement:	33
3.5.1.2	Contrast Stretching:	34
3.5.1.3	Sobel edge detection:	34
3.5.1.4	Perwitt Edge Detection	36
3.5.1.5	MRI image manipulation:	37
3.5.1.6	Image Thresholding:	38
3.5.1.7	Boundary Extraction	38
4	IMPLEMENTATION	40
4.1	Implementation On Matlab	40
4.1.1	Evaluated Datasets:	40
4.1.2	Custom GUI	42
4.2	Our Implementations On Virtex 4	44
4.2.1	Image inversion:	44
4.2.2	Image Contrast Manipulation:	45
4.2.3	Image Enhancement Manipulation:	45

	4.2.4	BoundaryExtraction:	45
	4.2.5	SobelEdgeDetection:	46
	4.2.6	HorizontalSobel:	46
	4.2.7	Vertical Sobel :	46
	4.2.8	Horizontal Prewit:	47
	4.2.9	Vertical Perwit:	47
	4.2.10	MRI Image Manipulation:	48
	4.2.11	Color Image To YCbCr:	48
5	RESULTS AND DISCUSSIONS		
	5.1	Results obtained from Matlab:	49
	5.2	Results obtained from FPGA:	52
	5.2.1	Image inversion:	52
	5.2.2	Image enhancement:	52
	5.2.3	Contrast stretching:	52
	5.2.4	Vertical gradient (Sobel):	53
	5.2.5	Vertical gradient(Perwitt);	53
	5.2.6	Horizontal gradient(Perwitt):	54
	5.2.7	Transformation form colored to YCbCr:	54
	5.2.8	Image thresholding:	54
	5.2.9	Edge detection using 5x5filter:	55
	5.2.10	Boundary Extraction:	55
	5.2.11	MRI image:	55
	CONCLUSION AND RECOMMENDATIONS		56
	REFERENCES		57