**DISSERTATION**

ON

**“INTRUDER MOTION DETECTION AND RECORDING IN THE REGION OF INTEREST”**

Submitted in partial fulfilment of the requirement

For the award of the degree of

**MASTER OF TECHNOLOGY**

**IN**

**(VLSI DESIGN & EMBEDDED SYSTEM)**

Submitted by

**Mrs. YOGESWARI TOLIA**

***(Roll No. 18/VLSI/09)***

**2009-2011**

Under the Guidance of

**SMT. S. INDU**

**(Associate Professor)**

**Department of Electronics & Communication Engg.**

****

**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

**DELHI TECHNOLOGICAL UNIVERSITY**

**(FORMERLY DELHI COLLEGE OF ENGINEERING)**

**BAWANA ROAD, DELHI-110042**

**2009- 2011**

**CERTIFICATE**

This is to certify that the thesis entitled ***“*INTRUDER MOTION DETECTION AND RECORDING IN THE REGION OF INTEREST*”*** beingsubmitted by Mrs. Yogeswari Tolia, in the partial fulfilment of the requirement for the degree of Master of Technology in VLSI Design & Embedded System in the Department of Electronics & Communication, Delhi Technological University, Delhi **is** a bonafide record of the research work done by her under my supervision and guidance. The contentsof this thesis, in full or in parts, have not been submitted to any other Institute orUniversity for the award of any degree.

 **Mrs. S. Indu**

**Associate Professor**

**Deptt. Of Electronics &Comm.**

**Delhi Technological University**

**ACKNOWLEDGEMENTS**

My first thanks are for my guide, **Mrs. S.Indu**, whose constant support, patience and unbounded enthusiasms were of invaluable help. Her devotion to the needs of the students and the encouragements has made working with her a true delight. Thanks for helping me to kick-start this research by providing insights and her work as reference. I would also like to take the opportunity to present my sincere regards to our Head of Department **Dr. Rajiv Kapoor** for his support and encouragement.

My sincere appreciation to my fellow classmate **Devendra Gupta** and **Ajay Aggrawal** sharing the similar research interests. I value the camaraderie we share as well as the time they spent to share with me enriching ideas, as well as assistance with the programming stuff and image acquisition. My sincerest thanks to all those who have helped to make this thesis possible. Warmest regards to my parents and brother for their seamless caring encouragement and moral support that has made this journey possible. Without exception, a special thank to my husband **Mr. Inderjit Singh** for his consistent encouragement and concern over time that made the journey meaningful. Without his unwavering support, this achievement would not have progressed as far as it did.

**Yogeswari Tolia**

**(18/VLSI/09)**

**M.Tech. VLSI Design &Embedded System**

**Delhi Technological University**

**Delhi**

**ABSTRACT**

This thesis is related to the broad subject of automatic motion detection and analysis in video Surveillance image sequence. Besides, proposing the new unique solution, one of the previous Algorithms are implemented. It has drawn an increasing attention in recent years due to its applications such as Communication, traffic monitoring, security surveillances, robot navigation and servicing. Despite the fact that much research efforts have been devoted to this area, detecting moving object using stationary moving camera remains a great challenge. The research undertaken in this thesis is mainly concentrated on developing reliable and robust intruder motion detection and recording system. The basic idea behind this system is that the motion of the moving object is different with the motion of background object. An improved background subtraction method has been applied for the motion detection .Research work shows that under most of the problematic environment, the proposed SAD algorithm shows the better quality result. By using the technologies, it is possible to monitor and capture every inch and second of the area in interest. However, so far the technologies used are passive in nature, i.e., the monitoring systems only help in detecting the crime but do not actively participate in stopping or curbing the crime while it takes place. Therefore, we have developed a methodology to detect the motion in a video stream environment and this is an idea to ensure that the monitoring systems not only actively participate in stopping the crime, but do so while the crime is taking place. Hence, a system is used to detect any motion in a live streaming video and once motion has been detected in the live stream, the software will activate a warning system and capture the live streaming video.

**TABLE OF CONTENTS**

**TITLE PAGE**

**CHAPTER 1 INTRODUCTION**

1.1 Objective 1

1.2 Project Scopes 2

1.3 Problem Statements 3

1.4 Motion Detection 3

1.5 Video Surveillance 4

1.6 Application of Motion Detection System 4

**CHAPTER 2 THEORETICAL BACKGROUND OF MOTION DETECTION**

2.1 Introduction 5

2.2 Goals of object detection 6

2.3 Background Subtraction 7

2.4 Method Illustration 8

2.4.1 Pre-processing 8

2.4.2 Recursive Techniques 9

2.4.3 Foreground Detection 10

2.4.4 Data Validation 10

**CHAPTER 3 ALGORITHMS**

3.1 Algorithm used in code 12

3.1.1Motion and noise detection algorithm 12

3.2 Main Program Flow Chart 13

3.3 Image acquisition 15

3.4 Motion Detection Algorithm 16

3.4.1Motion Detection Using 2D Correlation 17

3.4.2 Motion Detection Using SAD 18

3.4.3 Actions on Motion Detection 22

3.4.4 Data Record 22

**CHAPTER 4 EXPERIMENTATION RESULT & CONCLUSION**

4.1 System architecture functioning 23

4.2 Project setup and experimental results 25

4.2.1 Equipment Used for Project Development 25

4.2.2 Experimental Results 25

4.2.3 Features included 32

4.2.4 Limitations 33

4.3 Conclusion 33

**CHAPTER 5 RFERENCES 34**

APPENDIX 35