

## *Dedication*

*To our beloved father, mother, brothers, sisters, wife and Daughters.*

*To our beloved homeland, martyrs and injuries.*

*To our university, doctors and students.*

*Those who gave us the needed support and encouraged us all the time.*

*To complete this work.*

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# Contents

## Chapter One: Introduction

1.1 Introduction.....	2
1-2 Problem Statement .....	2
1-3 Multi-Cameras System Purposes.....	2
1.4 The Applications for Multi-Cameras System .....	2
1.4 1. Security Applications .....	3
1.5 Methodology .....	3
1.6 Layout of the Thesis.....	4

## Chapter Two: Literature Review

2-1 Introduction .....	6
2.2 Camera Specifications .....	6
2.2.1The Imaging Chip in the Camera.....	6
2.2.2Digital Signal Processing (DSP).....	9
2.2.3The Video Signal Resolution.....	9
2.2.4Light Sensitivity.....	10
2.2.5Signal to Noise (S/N) Ratio.....	10
2.2.6 Automatic gain control (AGC) .....	11
2.3Video Cameras .....	12
2.3.1Analogue Video Cameras.....	12
2.3.2Digital Video Cameras .....	12
2.4 Types of Camera .....	13
2.4,1Fixed CCTV Cameras .....	14
2.4.2 Pan, Tilt, Zoom (PTZ) Cameras .....	15
2.4.3 Dome Cameras.....	16
2.5 Power Source for Cameras .....	17

## Chapter Three: Transmission Signal

3.1Introduction.....	19
3.2Composite Video.....	19
3.2.1Video Signal.....	20
3.2.2Vertical Sync Pulses.....	21
3.2.3Horizontal Sync Pulse .....	21
3.3 Horizontal and Vertical Blanking.....	22
3.4 Horizontal and Vertical Synchronization.....	23
3.5 The Color Signal.....	23
3.6 Requirements to Produce a Good Quality Picture .....	24

3.7Cable Transmission.....	24
3.8 Cable Types .....	25
3.8.1 Unbalanced (Coaxial) Cables.....	26
3.3.2 Balanced (Twisted Pair) Cables .....	27
3.8.2.1Cable Selection .....	28
3. 8.2.2Cable Specifications.....	29
3.9 Fiber Optic Transmission.....	30
3. 9.1Advantages of Fiber Optics .....	30
3. 9.2Transmission by Light .....	31
3 9.3.Transmission Losses in Fiber.....	33
3. 9.4Transmission by Multi core Optical Fibers.....	33
3.10 Telephone line .....	34
3. 11Microwave .....	35
3. 12Radio Frequency.....	35

## **Chapter Four: Multiplexing and Recording**

4.1 Multiplexer Concepts .....	37
4.1.1 Multiplexer History .....	38
4.2 Multiplexer Types .....	39
4.3 Multiplexer operation.....	40
4.4 Multiplexer Displays .....	41
4.5 Motion Detection .....	42
4.6 Camera Encoding / Decoding.....	42
4.6.1Low Cost Encoder .....	43
4.6.2High Cost Decoder (One field memory).....	43
4.6.3 High Cost Decoder/Encoder .....	43
4.7 A/D Conversions .....	44
4.8 Switchers .....	44
4.9 Quads .....	45
4.10 Recording Systems .....	45
4.10.1 Video Cassette Recorder (VCR) .....	45
4.10.1.1 The VHS Video Recorder .....	47
4.10.1.2 Principles of Video Recording .....	48
4.11 Digital Technology & Recording .....	48
4.11.1 The Digital Video Recorder (DVR).....	49
4.11.2 Principles of Digital Video Recording.....	51
4.11.3 DVR System Characteristics.....	52
4.11.4 DVR Internal Architecture .....	52

4.11.5 Types of DVR .....	53
4.11.5.1DVR Capture Board.....	53
4.11.5.2 PC-Type DVR System .....	54
4.11.5.3Set-top Box DVR (Stand Alone).....	54
4.12 Advantage of A digital Video Recorder over a VCR.....	55
<b>Chapter Five: Circuit Operation, Software</b>	
5.1 Introduction .....	57
5.2 Parallel Port.....	59
5.2.1Parallel Port Specifications .....	59
5.2.2 Computer Side .....	60
5.3 Zener Diode .....	61
5.4 Relay .....	62
5.4.1Operation .....	63
5.5 Integrated Circuits .....	63
5.5.1SN 74LS373 IC.....	63
5.5.2 ULN2803 .....	64
5.5.2.1Connecting the ULN2803 to the Printer Port.....	64
5.6 Procedure of Design the Circuit .....	65
5.6.1 The Program.....	67
5.6.1 The Program .....	68
<b>Chapter Six: Results</b>	
6.1 Results.....	75
6.2 Discussion.....	75
<b>Chapter Seven: Conclusion and Recommendation</b>	
7.1 Conclusion .....	77
7.2 Recommendations .....	78
8 References.....	80

## List of Figures

<b>Figure 2-1:</b> Fixed Camera.....	14
<b>Figure 2-2:</b> PTZ Camera.....	16
<b>Figure 2-3:</b> Dome Camera .....	17
<b>Figure 3-1:</b> The Composite Video Signal .....	20
<b>Figure 3-2:</b> Unbalance Cable .....	27
<b>Figure 3-3:</b> Balance Cable .....	28
<b>Figure 3-4:</b> Construction of Single Optical Fiber .....	32
<b>Figure 3-5:</b> Multiple Fiber Cable .....	34
<b>Figure 4-1:</b> Multiplexer .....	38
<b>Figure 4-2:</b> Video Home System .....	46
<b>Figure 4-3:</b> VHS Tape Cassette .....	47
<b>Figure 4-4:</b> Digital Video Recorder .....	50
<b>Figure 4-5:</b> PC-Base DVR.....	54
<b>Figure 4-6:</b> PC-Type DVR .....	54
<b>Figure 4-7:</b> Set – Top Box .....	55
<b>Figure 5-1:</b> The Circuit Connections .....	58
<b>Figure 5-2:</b> Parallel Port Female .....	60
<b>Figure 5-3:</b> Zener Diode Connection .....	62
<b>Figure 5-4:</b> ULN2803 IC .....	64
<b>Figure 5-5:</b> The Circuit Program Flow Chart .....	68

## List of Tables

<b>Table 2.1:</b> Show What Quality to Expect From Various SIN Ratio .....	11
<b>Table 3.1:</b> PAL and NTSC System .....	22
<b>Table 3.2:</b> Frequency of the Synchronization Pulse .....	23
<b>Table 5.1:</b> 25Pin D-sub Connector Pin out .....	60
<b>Table 5.2:</b> Procedure of Design the Circuit .....	65
<b>Table 5.3:</b> Procedure of Design the Circuit- Step One .....	66
<b>Table 5.3:</b> Procedure of Design the Circuit- Step Three .....	67

# ACRYNOMS

## **AC**

Alternating Current

## **ACCESS CONTROL SYSTEM**

Electronic system used to allow, restrict and track the movement of people through entry/exit points in a site. This is achieved through the use of electronic individual codes, keys or cards etc, to release a locking mechanism.

## **AGC (AUTOMATIC GAIN CONTROL)**

An electronic circuit that is used to boost the video signal in a camera in low light conditions. Use of this feature will usually give a "noisy" or grainy picture. When comparing camera specifications always use data with AGC off.

## **ANALOGUE SIGNAL**

A signal in which the level is represented by a directly proportional voltage. In video the cameras scene is represented by varying the voltage in the video signal where the voltage is directly proportional to the light level.

## **DC**

Direct Current.

## **DE-MULTIPLEXING**

The process of separating different video, audio, or data signals, which were multiplexed at source.

## **DIGITAL SIGNAL**

An electronic signal, which is represented by binary numbers, and that, can be processed by a microprocessor, or stored in an electronic memory.

## **DOME**

Term used to describe a type of camera housing made of smoked glass or plastic usually containing a pan and tilt head and used for discreet surveillance.

## **DSP**

Digital Signal Processing. Refers to an electronic circuit capable of processing digital signals.

## **FIBRE OPTIC**

A very efficient method of transmitting video and telemetry signals over long distances using a light beam transmitted along a fibre optic cable constructed from high density Silica Glass.

## **HARDWIRED**

Refers to a method of controlling CCTV equipment by using multi-cored cable run between the controller and device to be controlled. Only used where the distance between controller and controlled device is short.

## **HORIZONTAL RESOLUTION**

The number of vertical lines that can be resolved in a picture.



**HORIZONTAL SHIFT REGISTER**

Part of the CCD image device to which the charge from the pixels is transferred line by line. This charge is then converted into an analogue video signal.

**ISDN**

(Integrated Services Digital Network). Telecommunications network that is capable of transmitting digital signals at speeds of up to 128kb/sec.

**LAN**

(Local Area Network). Means of connecting a number of computers to enable communication between each device connected to the network.

**LASER**

(Light Amplification by Stimulated Emission of Radiation). In CCTV this thesis of exceptionally pure light can be used to transmit signals along fibre optic cables, providing very high quality signal and data transmission.

**LED**

(Light Emitting Diode). A semiconductor that produces light when stimulated by an electric current. In CCTV these are used as the light source in some fibre optic transmission systems, and as light the light source for illuminating scenes for use with Monochrome cameras.

**LENS**

An optical device for focusing light onto the imaging device in a camera.

**MICROWAVE TRANSMISSION**

A method of transmitting signals using a microwave frequency link. Not affected by adverse weather but requires direct line of site. A licence may be required to operate a microwave frequency system.

**MODEM**

Derived from the term Modulate-Demodulate. A modem is used to convert between analogue and digital signal to then transmit and receive the signals over the PSTN network.

**MULTIPLEX VIDEO RECORDING**

The condensed recording of more than one video signal on a single videotape, or hard disk drive.

**MULTIPLEX**

The concept of transmitting several signals on a single channel.

**MULTIPLEXER**

A device that combines a number of signals into one. Often used in CCTV to describe a device that is primarily used to multiplex several video signals into one for the purposes of recording or microwave transmission. It can also refer to a fibre optics multiplexer which combines a number of video signals into one in order to transmit all of them via a single fibre cable.

**NOISE**

An unwanted signal produced by all electrical circuits working above the absolute zero. Noise cannot be eliminated but only minimised.

**NTSC**

National Television System Committee, an American committee that set the standards for colour television as used today in USA, Canada, Japan and a few other countries.

**PAL**

Stands for Phase Alternating Line, which describes the colour phase change in a PAL colour signal.

**PIXEL**

Derived from picture element. Usually refers to the CCD chip unit picture cell. It consists of a photo sensor plus its associated control gates.

**PTZ SITE DRIVER**

(PTZ site receiver, or decoder). An electronic device, usually a part of a video matrix switcher, which receives digital, encoded control signals in order to operate pan, tilt, zoom and focus functions.

**REMOTE CONTROL**

A transmission and receiving of signals for controlling remote devices such as pan and tilt units, lens functions, wash and wipe control and similar.

**S/N RATIO**

Signal-to-Noise ratio is calculated with the logarithm of the normal signal and the noise RMS value.

**VIDEO MONITOR**

A device for converting a video signal into an image.

**VIDEO SIGNAL**

An electrical signal containing all of the elements of the image produced by a camera or any other source of video information.

**VIDEO SWITCHER**

A device for switching more than one camera to one or more monitors manually, automatically or upon receipt of an alarm condition.

# **Abstract**

In recent years television channel witnessed a rapid development to become the fourth power. The transmitted image quality become the greatest concern to these channel ,which prompted the presence of cameras control unit which concerns about image quality by adjusting the photo coefficients like zooming ,focus , color adjustment ,this is done by the director instead of the camera operator.

The existence of camera control unit leads to a significant improvement in image quality, but it is expensive, also it needs a screen to monitor the form of the image as well as the complexity of the design.

In this project a control system for the multi-cameras have been proposed through the computer by simulating the control circuit through interface and by using of the computer screen at the same time to monitor the image.

The proposed circuit is design and operated using C++.The tests showed that the circuit is simple and it reduces the cost.

## تجريد

شهدت القنوات التلفزيونية في السنوات الأخيرة تطوراً سريعاً حتى أصبح يسمى السلطة الرابعة وأصبحت جودة الصورة الشغل الشاغل الأكبر لدى هذه القنوات الأمر الذي دفع الي وجود وحدة تحكم في الكاميرات تهتم بضبط معاملات الصورة كالتقريب و التباعد و تركيز الصورة و ضبط الألوان و الأضاءة بواسطة المخرج بدلاً من مشغل الكاميرات

ساعد وجود وحدة تحكم في الكاميرات الي تحسين كبير في جودة الصورة الا أنها عالية التكلفة اضافة الي حوجتها لوجود شاشة لمتابعة شكل الصورة وكذلك تعقيد التصميم .

في هذا المشروع تم اقتراح نظام تحكم للكاميرات عن طريق الكمبيوتر وذلك بمحاكات دائرة تحكم عن طريق ربط و استخدام شاشة الكمبيوتر في نفس الوقت لمتابعة الصورة.

الدائرة المقترحة تم تصميمها و تشغيلها بواسطة لغة C++ . و الدائرة بسيطة التصميم كما أنها تقلل التكلفة بشكل كبير جداً.