

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.

Acknowledgements

The research would not have been possible without the efforts of many people. My warm appreciation to my supervisor Dr.ABD ALRSOOL GABER ELZEBIDY for his unlimited support and assistance.

I would like to thanks the Electrical and Electronic Engineering Departments for their cooperation .Also, thank to all those who have made a contribution, or a suggestion and have helped in one way or another, large or small.

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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.

تہجید

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 إلى وجود وحدة تحكم في الكاميرات تهتم بضبط معاملات الصورة كالتقريب والتبعيد وتركيز الصورة وضبط الألوان والأضاءة بواسطة المخرج بدلاً من مشغل الكاميرات

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

في هذا المشروع تم اقتراح نظام تحكم للكاميرات عن طريق الكمبيوتر وذلك بمحاكاة 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.