

Designing a Plan for Camera System to Control the Security Section at Baghdad City

Nabaa Reyadh, Ali Adham, Razi J. al-azawi
University of Information Technology and Communication, University of Technology,

Abstract: Security is becoming important challenges and necessary nowadays as the possibilities of intrusion are increasing day by day. The camera system is a most important security requirement of everywhere. With the fast development of mobile devices and internet services, managing home security with these devices and services is gaining popularity. To expand the range of usability of conventional city surveillance cameras in this proposal work camera use in security situation to control of Baghdad city by use visual sensor network is a network of spatially distributed smart camera devices capable of processing and fusing images of a scene from a variety of viewpoints into some form more useful than the individual images With the possibility of analyzing the results and duplicate detection in addition to sending noise signals using special devices This design use Matlab to monitor a people in the street and detect criminals persons.

Index Terms: Camera System, Security Section, Designing a Plan, Simulation Model.

I. INTRODUCTION

Today's technology driven world is constantly changing, requiring the public safety community to quickly evolve. It is within this technology camera evolution enter into a security system and advanced programming, reducing the frequency of crime in Baghdad is to begin installing security camera system in all city [8]. Cameras as an effective crime prevention tool a city decides to implement a camera system as part of its crime-control strategy. Before installed cameras, several steps should have already been completed. City stakeholders should assess their city's needs, deciding how surveillance cameras will be introduced into the police department's overall crime-control strategy. Reviewing existing policing strategies, crime-fighting technologies, can help support law rescue. In order to make an educated decision about where to install cameras, one must first determined how many cameras the city would need in order to serve its purpose law, rescue and how many it can afford to purchase, install, and maintain. The availability of resources may affect a city's ability to a strategy in the way in which it initially intends. In addition, the model will be study the number of the cameras to be survey every area in the city [2].

Calibration of cameras parameters being determined independently on all cameras then determining the extrinsic parameters of all cameras the global world origin. To ensure optimum inter-camera consistency of calibration, which is an important issue regarding the transfer of tracked persons from one camera to another that measure accurately with a standard calibration pattern was enhanced with 4 diodes, so that the infrared tracking system is able to determine the calibration pattern accurately at any position within the scene [10]. The obtained pose information was transmitted to the diskless clients managing the cameras, with the cameras being used to record image sequences simultaneously, which can then be used to determine the extrinsic parameters via prevalent calibration methods[4].

Camera technology guide another important consideration in video cameras is resolution. Resolution is the measure of noticeable detail that can see in an image. The higher the resolution, the better the definition, clarity and quality of the picture. Lower-resolution cameras produce images with less detail, a high resolution camera could capture the detail of a person's face or a license plate number from a wide area [11; 12]. The wider the area you want to view, the more resolution you will need in order to see all the detail. If you want to monitor a smaller area and do not need to see a detailed view, a camera with lesser resolution might do. Keep in mind that higher resolution images also mean larger files sizes, which will take up more storage space on your DVR [5].

A visual sensor network is a network of spatially distributed smart camera devices capable of processing and fusing images of a scene from

A variety of viewpoints into some form more useful than the individual images[15]. A visual sensor network may be a type of wireless sensor network, and much of the theory and application of the latter applies to the former. The network generally consists of the cameras themselves, which have some local image processing, communication and storage capabilities, and possibly one or more central computers, where image data from multiple cameras is further processed and fused (this processing may, however, simply take place in a distributed fashion across the cameras and their local controllers as shown in the figure 1

II. THE CAMERAS CATEGORY

A. There are many cameras category that are used in security session. In this session we choose some cameras with the definition.

- 1- Box camera: a Box style camera is a standalone camera. The name is derived from the shape of the camera.

- 2- Dome camera: a Dome camera is a combination of camera, lens, and ceiling mount packaged in discreet dome shape
- 3- PTZ camera :a PTZ camera a contains mechanical controls that allow the operator to remotely pan, tilt, and zoom the camera
- 4- Bullet camera: a bullet camera is a combination of camera, Lents and housing packaged in a bullet – style body.
- 5- IP camera : an IP camera transmits a digital signal using internet protocol over a network
- 6- Day/night camera : a day/night camera is a camera used indoor and outdoor for environments with low light conditions
- 7- Thermal camera: at thermal camera uses thermal imaging to produce surveillance footage in dark or harsh environments. It uses heat to differentiate objects
- 8-Wide Dynamic camera: Wide Dynamic Cameras have the ability to balance light-levels on a pixel-by-pixel basis.
- 3-Wireless IP camera: Wireless IP security cameras offers ease of installation and eliminate the cost of network cabling when adding this camera to your video surveillance system.

Type camera	Benefits
box style security camera	1-Allow for customization of the lens, camera and housing to fit the needs of the installation 2-Offers many lens options, including varies- focal and fixed
Dome security camera	1-Aesthetically pleasing / compact in appearance 2-Available in vandal-resistant housings
PTZ Security Camera	1-Focus on areas of interest 2-Auto Track movement 3-Survey a wide area of interest and zoom in to detail
Bullet security Camera	1-Requires no separate housing or lens 2- Good for low-light situations
IP Security camera	1-Better system management than analog cameras 2- Resolutions from VGA to 29 Megapixels
Day/ Night Security camera	1-Handles both day and night- time 2-Lighting situations
Thermal Security Camera	1-Detect people and objects in smoke, haze, dust, light fog 2-Works in complete darkness
Wide Dynamic Camera	1-Capture clear faces shots when a people are entering with bright light behind them and with dark shadows on their faces. 2-Used in areas with too much sunshine or where headlights are used, such as parking lots.
Wireless IP Camera	1-Motion detection for instant alerts of intruders 2-Crystal clear images, even in.

Table 1 shows the benefits of each camera.

B. Cameras Approached Challenges

- 1. Challenge is the quality of data/Images or audio recordings are not always perfect in such systems, objects of interest can be partially obscured, camera lenses maybe covered or damaged, the person (object) being recognized may have deliberately covered itself up. Even when these problems do not exist, there are other factors causing quality concerns, such as, poor illumination, sensor noise, particularly in poor lighting conditions and low resolution of the cameras. Furthermore, CCTV technology has now begun to be deployed on public transport systems such as buses and trains e.g., (Basie 2009; Security 2005) which

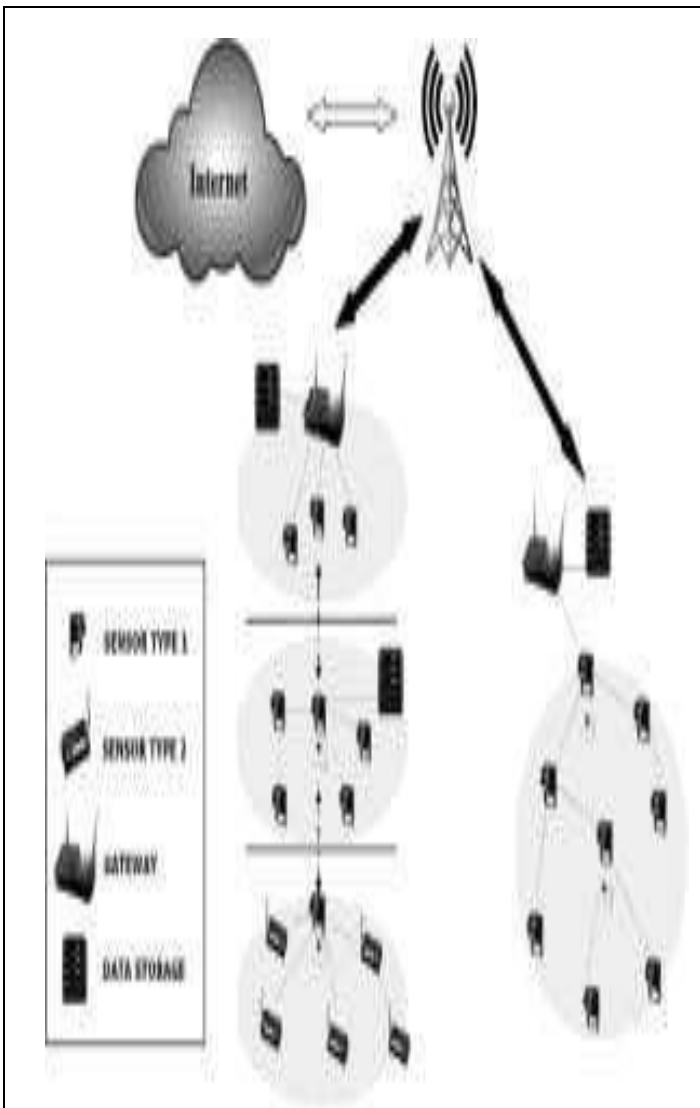


Figure 1. Visual sensor network architecture

bring unique problems that are not encountered in conventional CCTV deployments. Therefore, information recorded by such systems is strongly subject to noise and obscurity.

2. Challenge is the uncertainty of recognized events from a source (e.g., a camera) due to the poor quality of data provided. Any events detected from such imperfect information are subject to uncertainty and many possible events can be generated from the same set of images, e.g, multiple explanations. For instance, it can be very difficult to judge if a person is a male or female if the person wearing a heavy coat entering a bus with its back deliberately leaning towards a camera. Therefore, adequate mechanisms shall be deployed to model such uncertainty and ignorance associated with the detected events (multiple explanations of events). Along with this challenge comes the issue of reliability of sources. Example of this scenario is when an algorithm being applied to detect an event is not 100% accurate itself. So there is an issue about how the reliability (of the algorithm) should be integrated with the detected events (which are uncertain).
3. Challenge is the inconsistency or conflict among multiple sources. A CCTV- based surveillance system could consist hundreds of cameras, such as in medium-sized airport. The detection of events related to certain individuals come from different cameras when the individuals moving around at the airport or on a bus. Therefore, events detected from multiple cameras/sensors relating to the same object (person/people) must be combined to reduce uncertainty and inconsistency. A typical scenario is that from a camera with poor visibility a male is detected while from the audio recording it strongly indicates a female. So adequate methods must be applied to resolve this inconsistency.
4. Challenge is the adequate modeling of events information. For real-time surveillance involving multiple sources, the representation of events is particularly important, since it influences fundamentally the ways to merging detected events from multiple sources and the uncertainty and inconsistency handling during the fusion process. Since events can be detected from various sources with different types of information, a formal event model defining all its elements (attributes) with clear semantics is fundamental not only to representing events themselves but also to making inferences Subsequence. We shall also bear in mind that different knowledge representation mechanisms may be only suitable for certain kind of event scenarios. Therefore, selecting an adequate reasoning mechanism coupled with suitable events modeling is crucial for event-driven applications.
5. Challenge is the composition of elemental events for inferring and predicting threats. A single event cannot reveal potential threats most of the time unless it is extremely significant. Most of the time. Multiple atomic events together paint a picture of certain intentions by the objects (e.g., people) and then actions can be taken to prevent them. This is referred to as

events composition. A common technique to event composition is to create a set of rules correlating atomic events for predicting other events. Therefore, obtaining these rules and validate them are important for drawing meaningful conclusions.

6. Challenge is the scalability of the system. Imaging a real-time intelligent surveillance system with many hundreds of cameras across a large network, the scalability of its modeling and reasoning power is greatly challenged. What should be the manner that we revise/update rules for events composition if rules are used? Do we expect all the sources provide information/conclusion with the same set of vocabulary? How much change is needed if new types of equipment are brought into the system? Another issue in this challenge is the requirement of software suitable for developing event management and event reasoning systems
7. Challenge is building ontologism for surveillance systems to realize the scalability of a large surveillance system, surveillance ontologism must be considered. Ontology is a specification of a conceptual at that is, ontology is a description of the concepts and relationships that can exist for an agent or a community of agents. If each camera/sensor/equipment is taken as an agent, then surveillance ontology is needed, at least for events models, in order to allow information from multiple sources to be exchanged and merged.
8. Challenge is the evaluation of a surveillance system for data mining or machine learning algorithms, there are now some standard data sets for validating and evaluating new algorithms and for comparing them with existing ones. For CCTV based surveillance systems, each security concern is different, the objects being recognized and events being detected more application specific, is that possible to establish a repository containing some common surveillance scenarios? Who are the people providing these scenarios, and what are the evaluations criteria? Realistically, it is a very difficult task to evaluate a complete surveillance system from a situation awareness viewpoint, not from the point of individual video/image analysis algorithms. It needs to be pointed out that there are equally challenging issues for video/image analysis, signal processing from the vision/signal research

III. MANAGEMENT OF TRACKING

The tracking algorithm described is working independently and asynchronously for each camera without knowledge about other cameras or synchronization mechanisms on the client sides. Using this design principle, a server application handles the centralized management of the tracking results and takes care of the transfer of tracked targets between cameras (and consequently, processing nodes) [1].

The advantages of this approach lie with its full scalability and the lack of need for synchronization. To realize the approach, global modules for registration of the single

trackers, a global display module, a module for the generation of unique target IDs and for the management of the transfer of targets between tracking clients were implemented.

All of these modules are running on the server computer of our hardware installation, while the client applications, responsible for detection and tracking, run on the diskless processing nodes. Management Server a challenging task is to decide which client should do the tracking, when to transfer targets, and where to transfer targets to.

IV. CASE STUDY AREA

Baghdad is one of the oldest cities in the world. Its history dates back to about AD754–775, when the first stone was erected by the Abbasid Caliph, Abu Jafar Al-Mansour to erect The Round City within Baghdad’s inner urban area. Figure 2 shows the case study area This form shows a street from the streets of Mansur, located in Baghdad



Figure 2: map case study areas

V. Methodology

A simulation is the imitation of the operation of real-world process or system over time. Generation of

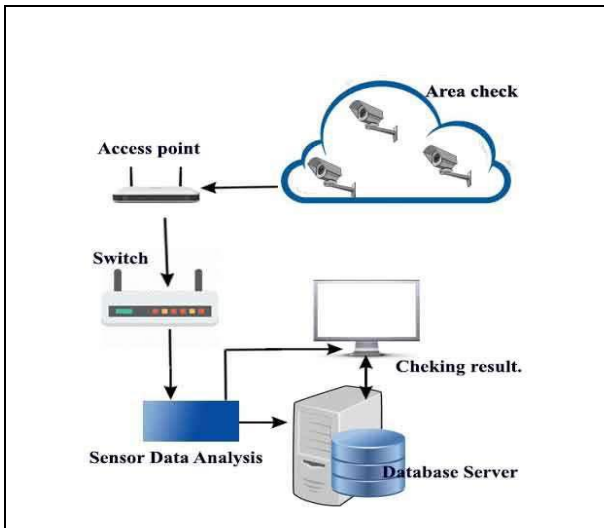
artificial history and observation of the observation history [3] a model construct a conceptual framework that describes a system The behavior of a system that evolves over time is studied by developing a simulation model. The model takes a set of expressed assumptions: Mathematical, logical symbolic relationship between the entities, a model can be used to investigate a wide verity of “what if” questions about real-world system. Potential changes to the system can be simulated and predicate their impact on the system. Find adequate parameters before implementation [9]. So simulation can be used as analysis tool for predicating the effect of changes design tool predicate the performance of new system it is better to do simulation before implementation. The simulation model is an one of the important means to resolve problems and problem-solving techniques and final way to solve any problem if master resolved but the way analytical or numerical simulation based on the methods of resampling re-generate random numbers and variables her recipes have certain qualities, First, the definition of system many components/system, entity, attribute, activity, state of the system: system definition.

Terms of use MATLAB application simulation use MATLAB to monitor people in the street and detect criminals system.

MATLAB is an integrated technical computing environment which combines numerical computation, advanced graphics and visualization, and a high level programming language. The MATLAB Programming language is used to store the data in the form of matrices. MATLAB can provide a quick interface with the data matrices. This software provides a frame acquisition from hardware devices such as web cams or digital cameras as long as the devices are correctly initialized by the user. In order to allow quick setup with the image acquisition devices, MATLAB function directory will provides an host of predefined functions by which the user can enquire about the various different devices which are currently connected and then setup is made with the required device using MATLAB, so that it can acquire and store data at run time [7].

A. WSN (Wireless Sensor Networks)

owing to their huge applicative potential offer a practical solution to the problem mentioned above. A typical WSN mainly consists of spatially distributed random sensor nodes which independently workand collect some data which is then sent the some central analyzing center where the data is collated and analyzed for further action. The topology and the network structure of WSN is not a strict standard and can be varied and designed as per the requirements. The WSNs have been lately successfully employed in various applications ranging from area monitoring, landslide detection to health monitoring and other bio-medical applications. This success can be attributed to the recent emergence of the simulation tools which can offer a real time simulation of the entire sensor network. The simulation software used in this context in Matlab simulation [15].



Figuer3: TheframeworkWirelessSensorNetworks

B.Tools

- 1- Matlab programing or other simulation program
- 2- CMUcam3 camera (outcome camera)
- 3- Windows server 2013
- 4- Two computers and wireless access network point.

C. Motivation

The security in camera system it's very important in usual life end users need comprehensive security solutions to obtain assurance the treatment of the security issues[14].

D. Challenges related to these systems

1. Espionage highlights the need to protect critical data from politically your financially motivated threats. Critical data includes the information needed to run network infrastructure as well drive innovative solutions.
2. Sabotage of computer networks can affect critical infrastructure and ultimately impact corporate and backbone networks.

VI. EXPECTED RESULTS

Determine the best types of cameras that fit put Baghdad in terms of climatic conditions and economic situation in Iraq. Determine the number of major centers to control the cameras. The possibility of recommending canceling some or all of the checkpoints inside the city and shortening its entry gates of the city. Ease traffic congestion within the city relying on cameras instead of the security checkpoints. The research also identifies the number of main centers that relay system within the city and a mechanism to communicate with each other in terms of control of all cameras. Moreover, research touch on the most important aspect of which is the economic side, the country is going through a selection of cheaper cameras that achieve the best results, and the method of the case study can approach in any other city after formulating.

In this paper, an exible, scalable and modular many-camera system for simultaneous tracking of multiple persons using natural features was presented.

The system was implemented using the proposed tracking and communication architecture. Subsequently, the system was evaluated by tracking persons exhibiting high variance. Their height, appearance and motion habits, as well as under different illumination conditions during the

respective days. This was done in order to test the applicability of the rather coarse model assumptions, the applicability of the rigid non articulated cylindrical shape representation and the evaluation of color statistics from the top view.

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