Topics in Coding, Cryptography and Information Security

Editors:

Mohammad Umar Siddiqi
Sigit Puspito Wigati Jarot
Othman Omran Khalifa

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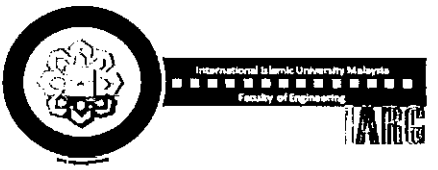

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Chapter 21

Wireless IP Camera Based on Motion Detection Surveillance System

Zeeshan Shahid and Khaizuran Abdullah

21.1. Introduction

Camera surveillance has been a popular security tool nowadays. The new breakthroughs in technology, security cameras are more effective than ever before. Banks, retailed stores, and countless other end-users depend on the protection provided by video surveillance. While analog closed circuit television (CCTV) systems were once the norm, they can be expensive, requiring complicated installations and constant upkeep. Fortunately, advances in digital technology have made video surveillance systems far more cost-effective, flexible, and simple to operate. Security systems using IP (Internet Protocol) cameras are easy to install and maintain, and can be customized and scaled to perfectly match your specific needs.

Video surveillance has a number of benefits that are indispensable for today's society: it helps to prevent theft and vandalism of public and private places, prevent violence and crime, protect children and even improve customer image and trust on a particular vendor [1]. The aspects of video surveillance are pattern recognition, motion detection and tracking system [2].

Performance of the IP surveillance cameras is generally evaluated at encoding speed, video resolution, video frame bit rates and distortion, and power dissipation. Among these characteristics, the video resolution, the compression ratio and the frame rate are the most important to the users of the video surveillance systems because these features are highly related to the image quality and the network bandwidth. Moving Picture Experts Group (MJPEG) and MPEG4 Visual (Part 2 of the MPEG-4 group of standards) are the common standards used for image compression. However, both the MJPEG and the MPEG4 visual encoders are not efficient enough in terms of the compression ratio and image quality [3].

The availability and cost of high resolution surveillance camera, along with the growing need for remote controlled security, has been a major driving force in this field. A growing amount of information increases the demand on processing and tagging this information for subsequent rapid retrieval. To satisfy this demand, many researchers are working to find improvements and better solutions in video analytics, which is the semantic analysis of video data, to reduce running time and total cost of surveillance systems [4].

The advent of high resolution digital IP surveillance cameras, connected via the internet to a remote security monitoring station, enables a new approach that