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# Video Surveillance for Smart Phones with SMS Alert Using Background Subtraction Algorithm

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**ABSTRACT :** This paper presents architecture to improve surveillance applications based on the usage of the service oriented paradigm, with android smart phones as user terminals, allowing application dynamic composition and increasing the flexibility of the system. According to the result of moving object detection research on video sequences, the movement of the people is tracked using video surveillance. The moving object is identified using the image subtraction method. The background image is subtracted from the foreground image. From that the moving object is derived. So the frame algorithm and the threshold value is calculated to find the moving image. Using frame algorithm the moving frame is identified. Then by the threshold value the movement of the frame is identified and tracked. Hence the movement of the object is identified accurately.

### I. INTRODUCTION

Video Surveillance systems have increase their needs of dynamism in order to allow the different users (operators and administrators) to monitor the system selecting different QoS depending on the system status and to access live and recorded video from different localizations, for example, from their mobile devices. More concretely, in IP surveillance systems some resources involved are limited or expensive so dynamic reconfiguration could become competitive advantage for system integrator and designers able to offer flexible applications adaptable to users' needs[1]. Advances in programming paradigms have allowed increasing the dynamism and flexibility of distributed environments. Concretely, Service-Oriented approaches provide means of developing decoupled applications in heterogeneous networks by defining the concept of service.

A service, in the SOA context, is an entity that receives and sends messages through well-defined interfaces, allowing building more complex applications that increase the value of the system. This concept can be applied to QoS-aware (Quality of Service) systems, in order to ease the configuration and reconfiguration of applications. Besides, Android is a software stack for mobile devices that includes an operating system, middleware and applications that can be suitable for the development of the end-user surveillance application. For various computer vision applications, background subtraction (BS) is a "quick and dirty" way of localizing moving objects in a video shot by a static camera. In this perspective, motion detection is often the first step of a multi-stage computer vision system [8, 20, 24, 25] (car tracking, person recognition, wild-life monitoring, etc.). For this reason, it is usually required to be as fast and as simple as possible. Consequently, most BS methods label "in motion" every pixel at time  $t$  whose color is significantly different from the ones in the background [34]. This solution has proven successful whenever the camera is rigorously static with a fixed noise-free background



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## II. RELATED WORKS

Dynamic Web Service Composition Problems and Solution - Since the web has evolved as a service provider in all areas, there are few problems which are to be handled[2]. Some challenges faced by web services are related to security, quality of service and composition. Among all the challenges, web service composition turns out to be an area of major research, because it supports business-business or enterprise application integration. With the emergence of semantic web the scope for semantic based web services composition increases as it provides better results compared to the traditional method of discovering candidate services for composition. Along with the semantics the nature of composition also needs to be dynamic as the web services and its parameters are changing frequently[3]. This paper is a survey about the existing methodologies for semantic web services and discusses various solutions for various problems faced by semantics and dynamic based web services composition.

No-Heap Remote Objects for Distributed Real-Time Java - This paper presents an approach to provide real-time support for Java's Remote Method Invocation (RMI) and its integration with the RTSJ memory model in order to leave out garbage collection. A new construct for remote objects, named *No-heap Remote object (NhRo)*, is introduced. The usage of a NhRo guarantees that memory required to perform a remote invocation (at the server side) does not use heap-memory. Thus, the aim is to avoid garbage collection in the remote invocation process, improving predictability and memory isolation of distributed Java-based real-time applications. The paper presents the bare model and the main programming patterns which are associated with the NhRo model[4]. Sun RMI implementation has been modified to integrate the NhRo model in both static and dynamic environments.

Android Mobile Operating System for i.MX Applications Processor Platforms - Android is a free, open source and fully customizable mobile platform based on the Linux® kernel. Android offers a full vertical software stack: an operating system, middleware and key applications. It also contains a rich set of APIs that allows third-party developers to develop great applications. Freescale now supports Android with a board support package (BSP) that is ready to be adapted to select i.MX platforms. The i.MX51 multimedia applications processor running Android is an excellent platform for building a high-performance, low-power and cost-effective mobile device that successfully passes the Android Compatibility Test Suite (CTS). The reference hardware, images, source patches and documentation are available now for the i.MX51. Evaluation Kit [www.freescale.com/imxandroid](http://www.freescale.com/imxandroid). Freescale enables our customers with integrated hardware/software solutions to realize faster time to market, and the Android platform provides a compelling and innovative end user experience to support this effort. Using a layered approach with the right selection of components to interface into the Android stack results in a more complete and ready solution[5]. Customers will be able to directly develop applications on this integrated solution or easily modify their own drivers based on free scale's i.MX Android BSP.

Existing System

In the existing system, the moving object is identified using the some algorithms which are not exactly doing that detection works.

The image comparison is very difficult process in many existing systems[6]. And also there is no accuracy in the image sequences. Moreover there is no alert system to inform the admin when unknown object is detected. Image Retrieval from the remote place is done in the existing system.

## III. PROPOSED SYSTEM

In the Proposed system, the moving object is identified using the image subtraction method. The background image is subtracted from the foreground image. From that the moving object is identified. Here we can detect the exact image of the moving object. Another advantage of this system is when an unknown image is captured by the system it will alert the user automatically by sending an SMS to user's mobile.

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User will be using Android Mobile for the Retrieval of Images from the remote place to know whether those images are important and can be ignored. If some known people would have entered in the closed room, which can be ignored, as they are reliable people.

In this paper, we present a QoS-aware service-based architecture for surveillance systems, and a prototype of this architecture, where a video surveillance application is developed over the Android platform[7]. The proposed system provides various advantages which are as follows. It provides high accuracy in image capturing. It sends an alert to user's mobile whenever a new object is detected. The users can view the image, or video clips via his Android mobile itself. It effectively utilizes the background subtraction algorithm.

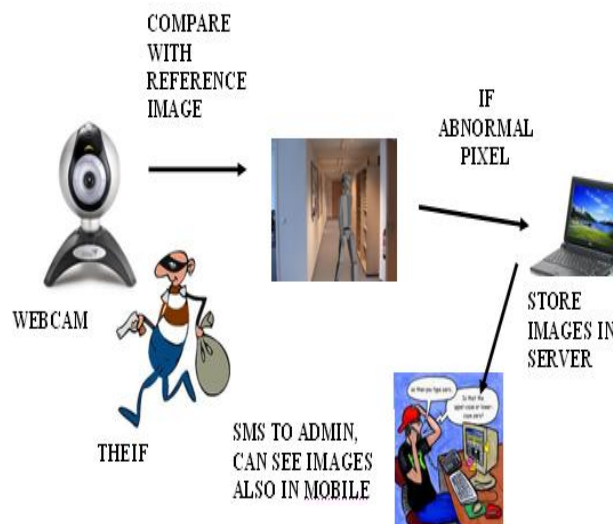


Fig. 1. Architecture Diagram

The Programming paradigms have allowed increasing the dynamism and flexibility of distributed environment[8]. Advantages of proposed system are high accuracy in image capturing, Send an alert to user's mobile whenever a new object is detected, User can view the image, or video clips via his Android mobile itself, efficient use of background subtraction algorithm

## IV. MODULES

- A. User Registration
- B. Reference Image Capturing
- C. Background Subtraction Algorithm
- D. Server
- E. Alert SMS
- F. Image Capturing by ANDROID

### A. User Registration

This process is registered by providing Name, Mobile number, Address for communication & other personal information. User access the main server through ANDROID implementation to fetch out the image of the thief. Android SDK installed in a Android mobile platform of the user. The ANDROID coding is converted into DEX file and then fused into a Android Enabled Mobile phone.

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## B. Reference Image Capturing

Web camera is connected with the place which is to be monitored. Once the admin locks the door, he will be switching on the Web camera device for capturing the image. The Web camera captures the first image which is kept as the Reference image for further computational process[9]. This reference image is always compared with the next following images for the sake the intruder detection by applying Motion detection algorithm.

## C. Back ground Subtraction Algorithm

Background Subtraction Algorithm is applied to find out the Motion in a particular room. The web camera is kept for further process. The reference image which is taken by the camera is compared with the further images taken by the camera. If same image persist, the no alert is initiated, if some movement or the motion is detected by the web camera, immediately, the triggers Back Ground Subtraction Algorithm, for further process. This Back Ground Subtraction Algorithm is effective in processing the subtraction the present suspected image with the previous Reference image. If there is any pixel change with respect to the reference image, immediately it alerts the server.

## D. Server

The main server will have the database of the admin's mobile number and also the server is connected with the mobile phone for sending Alert SMS to the admin's mobile. If there is any pixel change after applying Back Ground Subtraction Algorithm, immediately system alerts main server to initiate JSMS package to send SMS to the admin's Mobile as well as start recording all the frames in the main server.

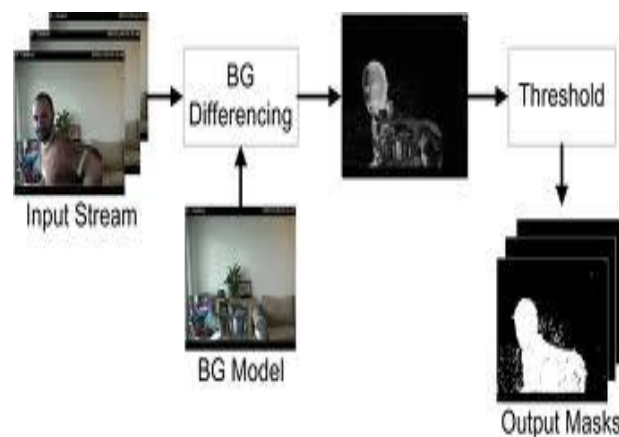


Fig. 2. Background Subtraction

## E. SMS Alert

If motion detection is confirmed, immediately system initiates the Mobile phone connected with the server for sending Alert SMS to the Admin's Mobile number. We use JSMS package for sending SMS to the Parent's Mobile. Admin will be receiving an Alert SMS "Motion Detected" in their mobile phone.

## F. Image Capturing by ANDROID

Once after receiving the alert SMS to the admin's mobile, admin will then login through his mobile to access Main Server via ANDROID package which is installed in his mobile[10]. Admin can see whether, the really thief has



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entered in or the Genuine people entry via Image which is recorded by the web camera then after initiating Alert SMS. The admin can decide then after either to neglect, if any genuine person has entered, or take action if thief has entered. To decide this admin not required to come directly, he can see through his Mobile phone via ANDROID connection.

## V. CONCLUSION & FUTURE ENHANCEMENTS

The implementation process in which a routing table is generated using trust value from each node. This table is used to avoid the colluded truncation attack. A double encryption mechanism is provided to each block of data through which security issues like Eavesdropping and Alteration are prevented. This also ensures confidentiality, integrity, authentication, authorization and scalability of the mobile agent. This paper minimizes the colluded truncation attack by trust value and also retrieves data securely using ECC encryption.

All though the complete security is provided to the data the agent is not completely securable. The security for the code has not been provided. In future security for code will be provided and running Mobile Agent in wireless environment.

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