Analysis Application To Detect Unaccustomed Activities Using Cauchy Distributive Model

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Abstract- *The main objective is to design surveillance based service system that provides security for particular place and alert the user by sending an alert message. In this method CCTV plays a major role and gives user a good experience of detecting the changes in a particular covered area using Cauchy distributive model. Camera will start comparing the frames and store the different frames in the form of picture in a server. Google Cloud Message (GCM) will intimate the changes in the server to the user. It will keep on notifying the changes in the server. User can login to view those detected pictures and also view the emergency contact number in and around the locality.*

Keywords- CCTV (Closed Circuit Television), Cauchy Distributive model, GCM (Google Cloud Message).

I. INTRODUCTION

Now a days the number of surveillance cameras installed in public space is increasing. Many cameras installed at fixed positions are required to observe a wide and complex area, so observation of the video pictures by human becomes difficult. So there is a need for automation and dynamism in such surveillance systems. In order to allow different users (operators and administrators) to monitor the system, selecting different Quality of Service (QoS) are required depending on the system status and to access live and recorded video from different localizations i.e. from their mobile devices. More concretely, in Internet Protocol (IP) surveillance systems, some resources involved are limited or expensive. So a technology using automatic detection of intruders (using image processing systems) and automatic alert systems will provide competitive advantage for surveillance systems. Advances in programming paradigms have allowed increasing the dynamism and flexibility of distributed environments. Simultaneously, 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.

II. RELATED WORKS

[1] Laptev, M. Marszalek, C. Schmid, and B. Rozenfeld, "Learning realistic human actions from movies," in *Proc. CVPR*, 2008.

This addresses the recognition of natural human actions in diverse and realistic video settings. This is challenging but important subject has mostly been ignored in the past due to several norms. One of which is the lack of realistic and annotated video datasets. This is a new method for video classification that builds upon and extends several recent ideas including local space-time features, space-time pyramids and multichannel nonlinear SVMs. Their experimental results demonstrate that post-processing techniques can significantly improve the foreground segmentation masks produced by a BGS algorithm. They provided recommendations for achieving robust foreground segmentation based on the lessons learned performing this comparative study.

[2] J. Nielbes, H. Wang, and L. Fei-Fei, "Unsupervised learning of human action categories using spatial-temporal words," *IJCV*, vol. 79, pp. 299–318, 2008.

This introduces a Spatial-Temporal Manifold (STM) model to analyze non-linear multivariate time series with latent spatial structure and apply it to recognize actions in the joint-trajectories space. Based on STM, a novel alignment algorithm Dynamic Manifold Warping (DMW) and a robust motion similarity metric are proposed for human action sequences, both in 2D and3D. DMW extends previous works on spatial-temporal alignment by incorporating manifold learning.

[3] P. Matikainen, M. Hebert, and R. Sukthankar, "Representing pair wise spatial and temporal relations for

action recognition," in *Proc. ECCV*, 2010, vol. 6311, pp. 508–521.

It presents a model for quality-of-service (QoS)-aware service composition in distributed systems with real-time and fault-tolerance requirements. This model can be applied in application domains like, for example, remote monitoring, control and surveillance. This paper proposes a simple representation specifically aimed at the modelling of such motion relationships. It adopts global and local reference points to characterize motion information, so that the final representation can be robust to camera movement. Our approach operates on top of visual code words derived from local patch trajectories, and therefore does not require accurate foreground background separation, which is typically a necessary step to model object relationships.

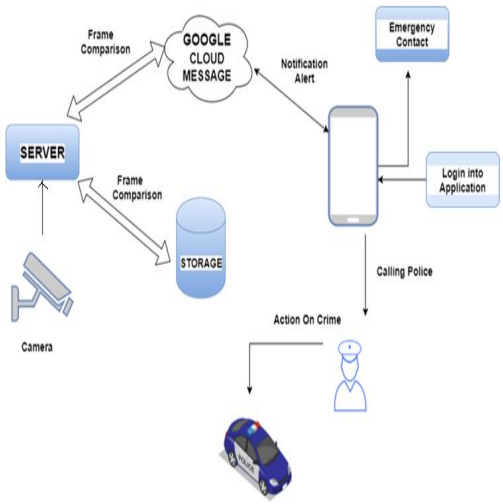
[4] P. Natarajan and R. Nevatia, "View and scale invariant action recognition using multi view shape-flow models," in *Proc. CVPR*, 2008

Actions in real world applications typically take place in cluttered environments with large variations in the orientation and scale of the actor. We present an approach to simultaneously track and recognize known actions that bust to such variations, starting from person detection in the standing pose. In our approach we first render synthetic poses from multiple viewpoints using Mo cap data for known actions and represent them in a Conditional Random Field(CRF) whose observation potentials are computed using shape similarity and the transition potentials are computed using optical flow. We enhance these basic potential switch terms to represent spatial and temporal constraints and call our enhanced model the Shape, Flow, Duration-Conditional Random Field (SFD-CRF). We find the best sequence of actions using search in the SFD-CRF.

III. PROPOSED SYSTEM

In the proposed system, CCTV camera installed in several places scans for the moving object; the moving object is identified using the image Cauchy distributive model. Once the object is detected the previous frame is compared with the current frame. The duplicate frames are removed and the original frames are storied in the server in the form of a picture. When the threshold value reaches the limit i.e., when the detected image is stored in the server then the system will alert the user by sending a GCM alert to the user's mobile that has already been registered with the application. User can view the detected image directly and also the emergency contact number in and around the locality.

3.1 ARCHITECTURE DIAGRAM:



In this method, the surveillance camera scans for a moving object. Once the object is detected it compares each frame and removes the duplicate frame and stores it in the server in the form of a picture. The server in turn stores the pictures in Google Cloud Message. This GCM notifies the user through a notification alert. This alert is send to the user's mobile. Now the user can login and view the detected images. In addition to this the user can also view the emergency contact numbers in and around the locality.

3.2 SOFTWARE REQUIREMENTS:

- Operating system : Windows XP
- Technology Used : Android 2.2
- IDE : Eclipse 3.4
- Emulator : Micro emulator 5055
- Plug-in : ADT plug-in

3.3 HARDWARE REQUIREMENTS:

- Processor : Pentium P4
- Mother Board : Genuine Intel
- RAM : Min 1GB
- Hard Disk : 80 GB

3.4 MYSQL SERVER

MySQL is a fast, easy-to-use RDBMS being used for many small and big businesses. MySQL is developed, marketed, and supported by MySQL AB, which is a Swedish company. MySQL is becoming so popular because of many good reasons. MySQL is released under an open-source

license. So you have nothing to pay to use it. It is a very powerful program in its own right. It handles a large subset of the functionality of the most expensive and powerful database packages. It uses a standard form of the well-known SQL data language. It works on many operating systems and with many languages including PHP, PERL, C, C++, JAVA, etc. It works very quickly and works well even with large data sets. It is very friendly to PHP, the most appreciated language for web development. It supports large databases, up to 50 million rows or more in a table. The default file size limit for a table is 4GB, but you can increase this (if operating system can handle it) to a theoretical limit of 8 million terabytes (TB). It is customizable. The open-source GPL license allows programmers to modify the MySQL software to fit their own specific environments.

3.5 GOOGLE CLOUD MESSAGING

Google Cloud Messaging (GCM) is a service that helps developers to send data from servers to their Android applications on Android devices, or from servers to their Chrome apps and extensions. The Android service was first unveiled on June 27, 2012, at Google I/O 2012 held at the Mo scone Centre in San Francisco. The Chrome service was announced before Google I/O 2013 as a blog post titled 'Building efficient apps and extensions with push messaging. GCM replaces the beta version of Android Cloud to Device Messaging Service the free service has the ability to send a lightweight message informing the Android application of new data to be fetched from the server. Larger messages can be sent with up to 4 KB of payload data. Google Cloud Messaging for Android (GCM) is a free service that helps developers sends data from servers to their Android applications on Android devices, and upstream messages from the user's device back to the cloud. This could be a lightweight message telling the Android application that there is new data to be fetched from the server (for instance, a "new email" notification informing the application that it is out of sync with the back end), or it could be a message containing up to 4kb of payload data (so apps like instant messaging can consume the message directly). The GCM service handles all aspects of queuing of messages and delivery to the target Android application running on the target device.

3.6 MOTION DETECTION USING CAUCHY DISTRIBUTIVE MODEL

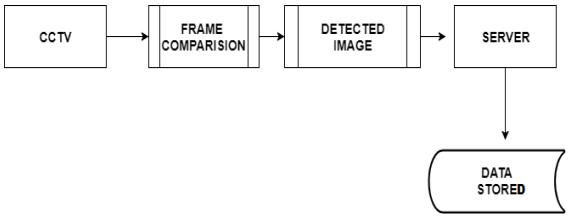


Figure1. Detecting an object and storing it in server.

In figure1 the first prior aim is to authenticate the user with the application to view the motion detected image. This includes username and password for authentication. The validation is based on web service in server. The Main aim of this module is to detect the motion in the particular area. The motion detection is done using Cauchy distribution model and gray scale algorithm. Cauchy distribution Model is used to detect the pixel of moving object in the detected incoming video frame.

3.7 SENDING GCM ALERT

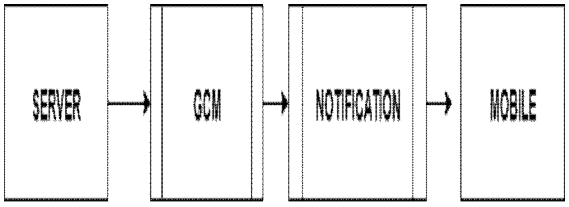


Figure2. Sending GCM notification to the user's mobile

Whenever a moving object is detected, it is saved in the server in the form of a picture and the server will notify the Google server. The Google server will send a GCM Alert to the android application user's mobile. Google Cloud Message for Android (GCM) is a service that allows sending data from server to user's Android-powered device. This could be a lightweight message telling there is a new data to be fetched from the server (for instance, a movie uploaded by a friend), or it could be a message containing up to 4kb of payload data (so apps like instant messaging can consume the message directly).

3.8 USER ACCESING THE APPLICATION

User authentication is a way of identifying the user and verifying that the user is allowed to access some restricted service. The main aim of this module is to authenticate the user to application to view the motion detected image. This module includes username and password for authentication to application. The validation is based on web service in server.

3.9 VIEWING THE DETECTED IMAGES

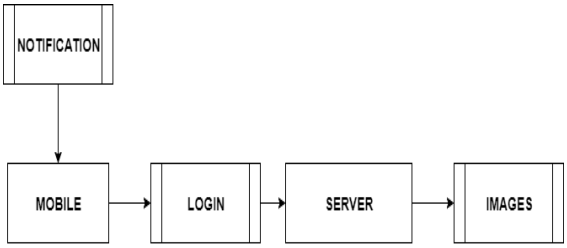


Figure4. Viewing the detected images

Android application will receive the notification (GCM) based on id which is registered in Google account, application id will be unique for each application. After receiving the GCM alert from the server, the user needs to authenticate for the application. The image can be viewed using the URL which is received from the GCM alert.

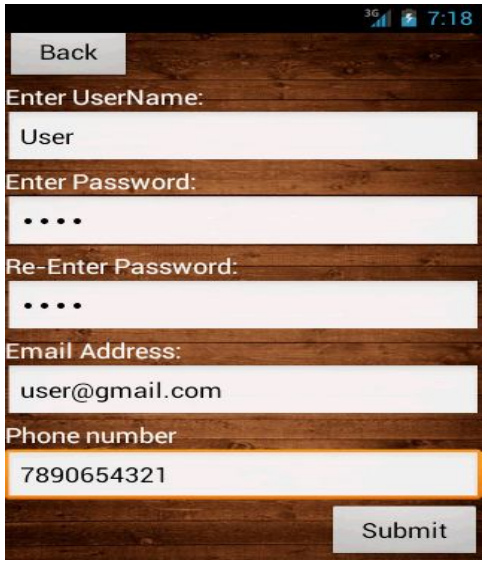
3.10 VIEWING EMERGENCY CONTACT

Whenever motion is detected that detected image is saved on the server and the server will notify the Google server. The Google server will send a GCM Alert to the android application of user's mobile who as registered for that application. User can directly call to the police From the Application and share the details of the location of Crime. Facility of Emergency Number are Added to the Application.

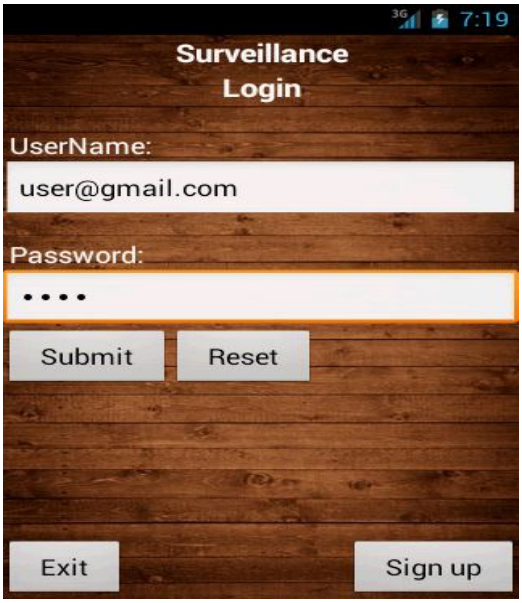
IV. RESULT

This method implements a unique technique called Cauchy distributive model which is the major advantage to the old system. This paper also has a unique feature in which it sends GCM alert at once the captured image is stored in the server.

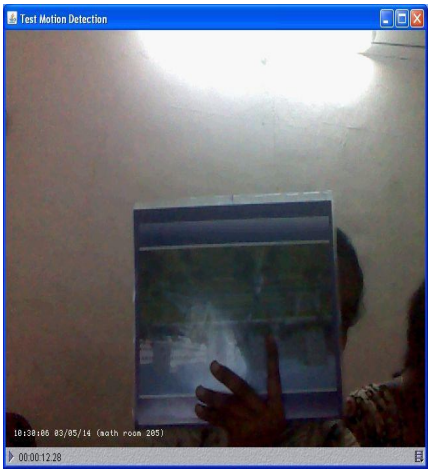
4.1 REGISTRATION FORM



4.2 LOGIN FORM



4.3 MOTION DETECTION



4.4 GCM NOTIFICATION

4.5 VIEWING DETECTED IMAGE

V. CONCLUSION

In traditional system human intervention is needed and has to watch keenly for keeping track of the entire system. But now with this paper we have introduced a unique technique which is a major advantage to the old system. This paper also has a unique feature in which it sends GCM alert at once there is any sort of variation in the captured pixel. Also we are in intent to dedicate this paper to many important Surveillance areas so that many unwanted things can be prevented.

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[4] P. Matikainen, M. Hebert, And R. Sukthankar, "Representing Pair Wisespatial And Temporal Relations For Action Recognition," In Proc. ECCV, August 2010, Vol. 6311, Pp. 508–521.

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