

Recognition of Human Action Under View Change

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1 INTRODUCTION:

1.1 Purpose of the Project:

This document depicts the demonstration of Recognition of human action under view change . The document also describes about the validation of the same project and how it can be used in practical applications to produce more accurate result and reduce human labour.

1.2 Goals of the Project:

The main goal of the project is to provide an automated surveillance system. This greatly increases the accuracy & precision and reduces human labour. The camera records the user's gestures and stores them in a temporary database. The stored data are split into blob images and analysed further. Based on this, the users are recognised.

2 PROJECT DEMONSTRATION:

2.1 Methodology Input:

The initial input is stored during the training phase. The administrator records each person's gestures and stores them in the database. This data is modified when required. It can only be done by the administrator and no one else is granted the privilege. Once the gestures are recorded, the training phase is completed.

2.2 Processing:

During the training phase, each person's gesture images are stored separately. There is a code associated with each blob image. If a new person enters the room, change in gestures is detected through a change in code associated with the image. If a change is encountered in a series of images, the person is categorized as unauthorized and a beep is sounded to alert the other officials.

2.3 Final Demonstration:

The camera captures a user in action. The captured video is split into images using **Java Media Framework** and blob images are saved and the frame counts are taken. The saved blob image is compared with the pre recorded images in the database with the help of **PCH(Pixel Change History)** and in case an anomaly is detected, siren is beeped.

2.4 Limitation:

The background should not change as the PCH will record the background pixel change also if the background changes. Usage of the high resolution camera results in difficulty of separation of frames which will slow down the process.

3 PROJECT VALIDATION:

Project Validation is done by comparing the given input video with the already pre recorded images.

3.1 User Based Recognition:

The system differentiates between various users based on their gestures. Each user has a specific action which is recorded during the training phase. So if the same person re enters, his is automatically authorized as most of his/her image frames match with those stored in the database and thus the system is validated.

3.2 Multiple Angle View:

The images are recorded from multiple angle - top view and front view. In the existing systems, as only 1 view is considered there may be certain cases where the top view does not match leading to improper authentication. But in this proposed system, since both top and front views are considered, even if certain image frames in one of the views do not match, the user is given authorization as overall most of the image frames get matched considering both the angles.

3.3 Final Result:

The final output of the system tells whether a person is authorized or unauthorized based on his actions. Hence Recognition of Human Action Under View Change has been effectively implemented in giving accurate results.

4 CONCLUSION:

Hence a self-similarity-based descriptor for view independent video analysis is proposed, with human action recognition as a central application. Self-similarity being possibly defined over a variety of image features, either static (histograms of intensity gradient directions) or dynamic (optical flows or point trajectories), these descriptors can take different form and can be combined for increased Descriptive power. Experimental validation on action recognition, as well as for the different problem of action synchronization, clearly confirms the stability of this type of description with respect to view variations.