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Real Time Moving Object Detection

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Abstract: Detection of moving objects in video streams is that the first relevant step of data and background subtraction may be a very talked-about approach for foreground segmentation. in this system, we are going to simulate different background subtraction strategies to beat the matter of illumination variation, background clutter and shadows. detecting and tracking of frame elements is very important in understanding human activities. Intelligent and automatic security surveillance systems became an energetic analysis space in recent time because of associate increasing demand for such systems publicly areas like airports, underground stations and mass events. during this context, pursuit of stationary foreground regions is one in every of the foremost vital needs for surveillance systems supported the pursuit of abandoned or purloined objects or pose vehicles. it's terribly difficult for somebody's operator to effectively observe events as they happen. Recently computer vision analysis has got to address ways in which to automatically a number of this knowledge, to help human operators. Video surveillance system is a process of monitoring and analyzing video sequences for the purpose of checking the behavior, activities and other certain information in a video sequence. In this system, the system will calculate the number of people present in house, room etc. and on that bases it increases or decreases the speed of fan.

Keywords: R-CNN, Automatic Detection, Tracking, Real-Time Video

I. INTRODUCTION

Video surveillance is an energetic analysis topic in computer vision that tries to notice, recognize and track objects over a sequence of pictures and it conjointly tries to understand and describe object behavior by replacement the aging previous ancient method of observation cameras by human operators. Object detection and following are necessary and difficult tasks in several laptop vision applications like surveillance, vehicle navigation and autonomous mechanism navigation. Object detection involves locating objects within the frame of a video sequence. each following methodology requires an object detection mechanism either in each frame or once the item first appears within the video. Object following is that the method of locating an object or multiple objects over time employing a camera. The high-powered computers, the provision of high quality and cheap video cameras and also the increasing would like for machine controlled video analysis has generated a good deal of interest in object following algorithms. There are 3 key steps in video analysis, detection attention-grabbing moving objects, tracking of such objects from every and each frame to border, and analysis of object tracks to acknowledge their behavior. Therefore, the employment of object following is pertinent in the tasks of, motion primarily based recognition. Automatic detection, tracking, and tally of person gone below the surveillance. Deep learning has fashioned a thought seeing algorithmic program supported R-CNN, and this algorithmic program is refreshing the upper accuracy in a very variety of noted datasets.

II. LITERATURE SURVEY

Title: Analysis of Moving Object Detection and Tracking in Video Surveillance System
Author: Kamal Kant Verma, Pradeep Kumar, AnkitTomar
Description: Moving object detection is a challenging task in low resolution video, variable lightening conditions and in crowed area due to the limitation of pattern recognition techniques and it loses many important details in the visual appearance of the moving object. In this paper we propose a review on unusual event detection in video surveillance system. Video surveillance system might be used for enhancing the security in various organizations, academic institutions and many more areas.

Title: A Design of Detection and Tracing System Based on Dynamic MultiObject
Author: Wantao Kou1, Yu Wang2, Jinxu Guo2, Hao Zhang, Shengfa Liu1
Description: The captured image is divided into the foreground and background by the mixed Gauss background model, and then the dynamic target of each frame in the video is found. The Camshift algorithm based on Kalman filter and feature fusion is used to track it. In this process, real time video camera is used to obtain the real-time video. The experimental results show that the Kalman filter can well predict the target's position to reduce the number of iterations

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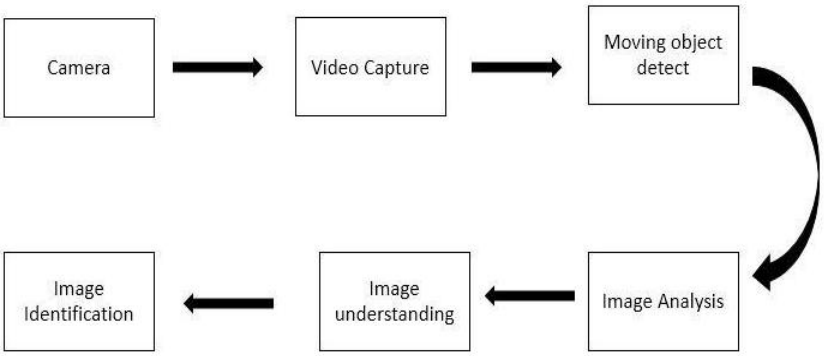
in the Camshift algorithm, the texture feature and color feature selection combining histogram can track the target better, reduce loss rate, improve the real-time target detection and tracking.

Title: Detection of a Specific Moving Object from Head-mounted Camera Images
Author: Katsuma Ishitobi, Joo Kooi Tan
Description: A method is proposed for detecting and tracking a specific moving object (e.g., a bus) on the road From these optical flows, we remove the optical flows of camera motion using projective transformation and RANSAC from images of a camera attached to the head of a user, aiming. A moving object region is estimated from the remaining at developing a system to support daily lives of visually impaired optical flows. Haar-like feature and random trees are people. The proposed method traces feature points on the applied to this estimated moving object region to find a images, extracts a moving object region, and detects a bus by applying Haar-like feature and random trees to the region. The effectiveness of the proposed method is shown experimentally.

III. PROPOSE SYSTEM



In proposed system Real time Web Cam on PC or Laptop will Analyze the current stream. video and detect moving object from current video. It will add different object and analyzed the object type and display on dashboard and send count of a person available control the fan speed based on values of total no. of person.

IV. SYSTEM ARCHITECTURE

Following diagram is our system's architecture diagram:

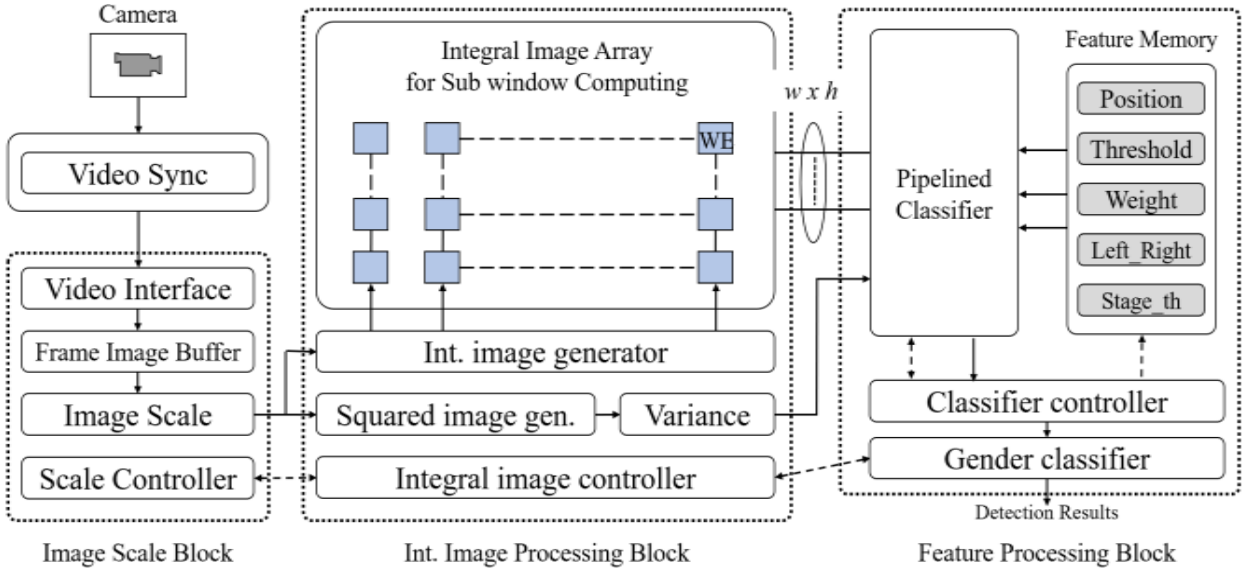


Figure 1: System Architecture

Now a day's intelligence system is become more popular, in which detection and tracking of moving object as important part of the system.

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Detecting the object is more important. In this system architecture the web camera capture the video for recording the movement of object that is present in the room. In this architecture Image scale block include video feature named video interface , Frame image buffer, Scale controller .The Image processing block include the image processing feature. And Feature processing block shows the work and component that include for classifying object, gender classifier like classifier controller, gender classifier.

The module like as following:-

1. **We camera:** In that we Webcams can be used. Software is available to allow PC-connected cameras to watch for movement and recording when they are detected. These recordings can then be saved to the computer or database.
2. **Detect the object in video:** In that system detect the people present in room and on that bases increases and decreases the speed of fan in room to save electricity and decrease the level when person leaves the room.
3. **Detect the Male and Female:** We applied Haar cascade algorithm or classifying the face and determining the gender.

V. ALGORITHM

1. RCNN :

1. Take an input image and pass it to the ConvNet which returns feature maps for the image
2. Apply Region Proposal Network (RPN) on these feature maps and get object proposals
3. Apply ROI pooling layer to bring down all the proposals to the same size
4. Finally, pass these proposals to a fully connected layer in order to classify any predict the bounding boxes for the image

2. Face Detection using Haar cascades:

we apply each and every feature on all the training images. For each feature, it finds the best threshold which will classify the gender . We select the features with minimum error rate, which means they are the features that best classifies the face and non-face images.

VI. MATHEMATICAL MODEL

S={s, e, i, o, functions, DD, NDD, Success, Failure}
s = initial state = camera setup
e = end state = Moving object will detect
i = Input = video capture
o = output = Moving object will detect
Functions = {f1, f2, f3, f4, f5}
f1 = Video capture
f2 = Image analysis
f3 = Image understanding
f4 = Image Identification
Deterministic data = for same input return the same result at any time
Non deterministic data = result will vary every time for given input
Success condition = According to video capture moving object will detect
Failure condition = Wrong inputs, ambiguity capturing video, Low quality.

Application

- Attendance System.
- Traffic light management.
- Keep count of huge presence of crowd.
- Track over objects passing through video.
- Face Recognition for security basis.

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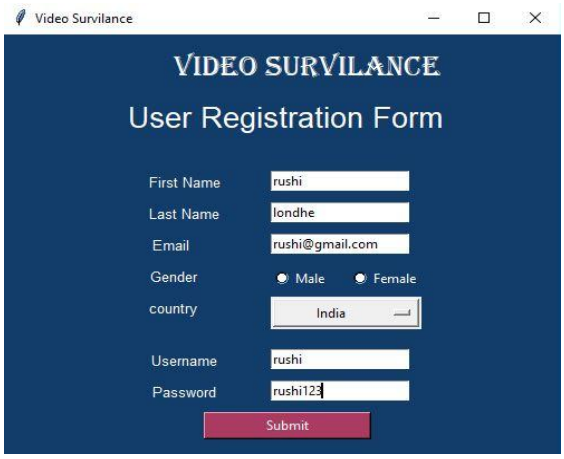
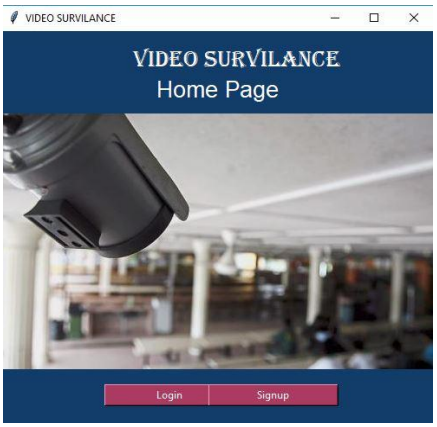
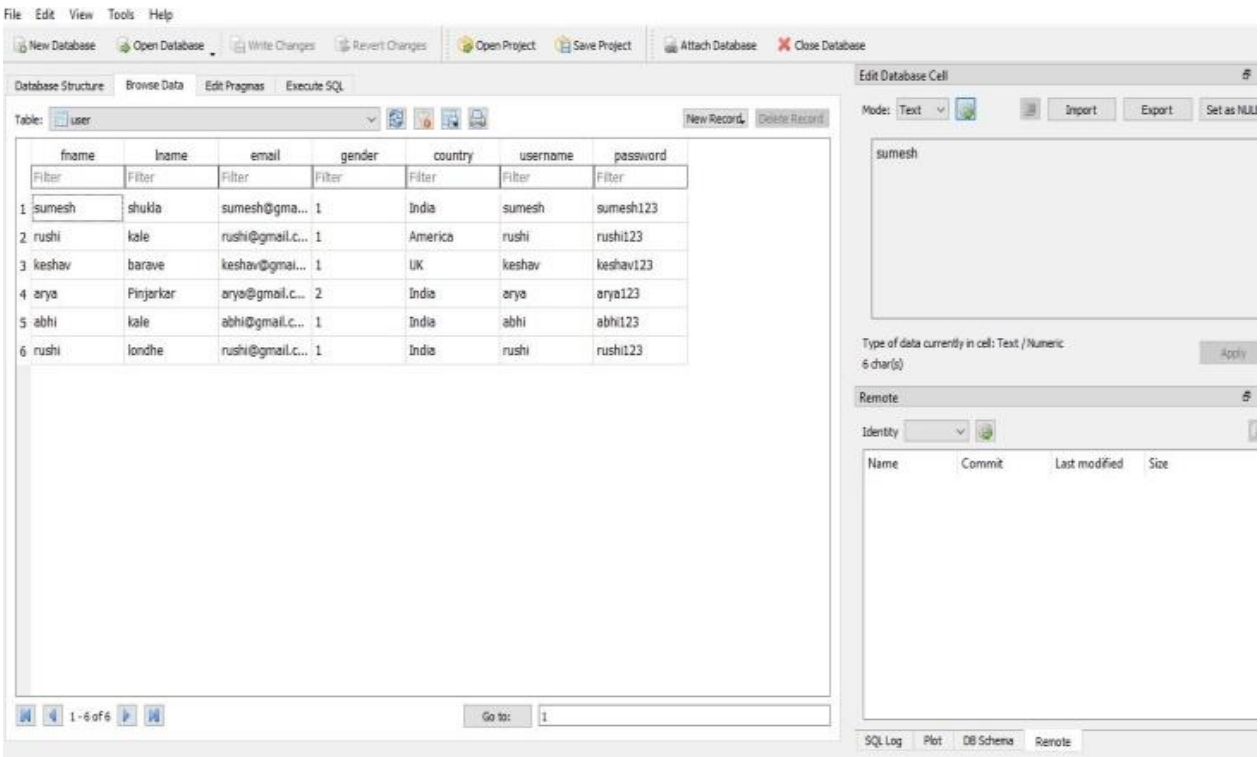
VII. RESULT







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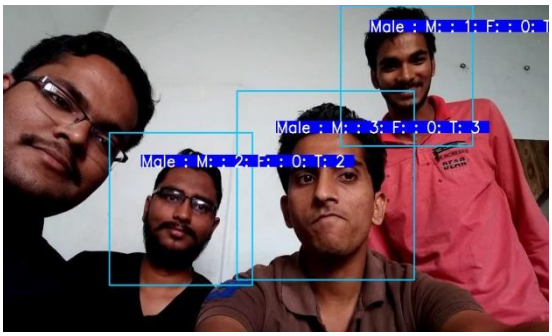

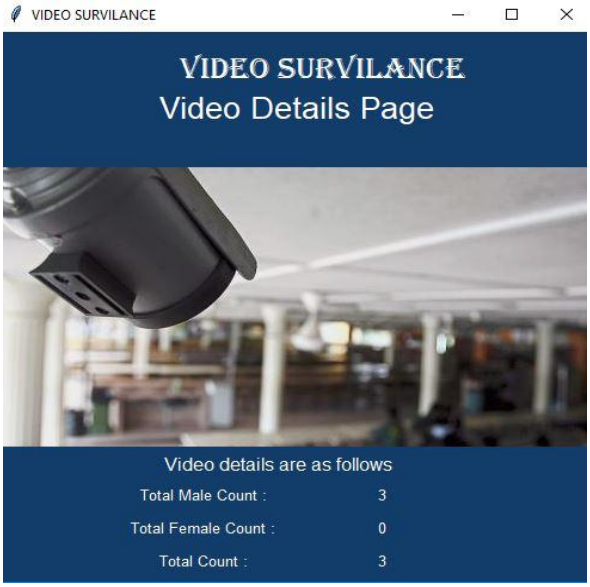

VIII. CONCLUSION

In results, there are many opportunities regarding object detection, both in unseen applications and in new methods for pushing state of the art results. The proposed system will try to increase the accuracy of detection of the object using deep learning and keep the count of the persons detected in video.

IX. FUTURE SCOPE

- Make this system work with multiple cameras.
- Improve system accuracy for heavy crowd areas using multiple cameras.
- Train the system for vehicles to control the traffic light automatically.
- Connect IoT devices to make local environment more controllable.

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