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A Pedestrian Detection &Tracking System Using HOG Detector

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ABSTRACT

Pedestrian detection achieves through cascade classifier framework where its detection rates are competitive with some of the best methods to date in terms of both performance and running time. Pedestrian tracking provides a solution to handle the real-time conditions and video attributes as a temporal continuity attribute but the time consuming of the most tracking algorithms makes tracking problem an open area of research. The tracking method is responsible for tracking the face by distinctive features, but in a fast manner. Optical flow is used to track objects, it is an adaptive algorithm based for previous tracking algorithms. In this method previous frame optical flow method gets current key points and a homographic transformation between the previous and the current frames.

Keywords: Performance, Tracking, Optical flow, Homographic.

1. INTRODUCTION

The process of identification of objects in an image can be done with Digital image processing techniques such as removal of noise, locate lines and regions and possibly areas with certain textures. The main bit is the collection of these shapes as single object. The problem is that an object can appear very different when viewed from different angles or under different lighting this can be performed through human visualization, but a computer requires skilful programming and lots of processing power to approach human performance. To process such performance digital image processing is used. Manipulating data in the form of an image is done by several possible techniques. An image is usually interpreted as a two-dimensional array of brightness values and is most familiarly represented by such patterns as those of a photographic print. Processing of image can be done optically or digitally with the help of a computer.

2. PROPOSED SYSTEM

Background subtraction is a technique used in image processing. It is used to detect the moving object in the videos from static cameras. It detects the difference between current frame and reference frame in a moving object. Such process of detection is called background image or background model. This method is also called as frame difference method. The animated images on the screen can be detected by indoor detection, where as illumination change due to rain or weather can be detected by outdoor detection. The intensity value of every pixel in the video can be modulated by Gaussian mixture model. The Gaussian model determines which image should be placed in the background with most probable intensity. The image which cannot be placed in the background are called foreground images and it can be analysed by 2D connected components. It is widely used in video surveillance, Optical motion capture, Traffic monitoring, Real-time motion gesture. The Histogram of Oriented Gradients (HOG) is used in image recognition and object detection .It is similar to edge orientation histogram. Computer

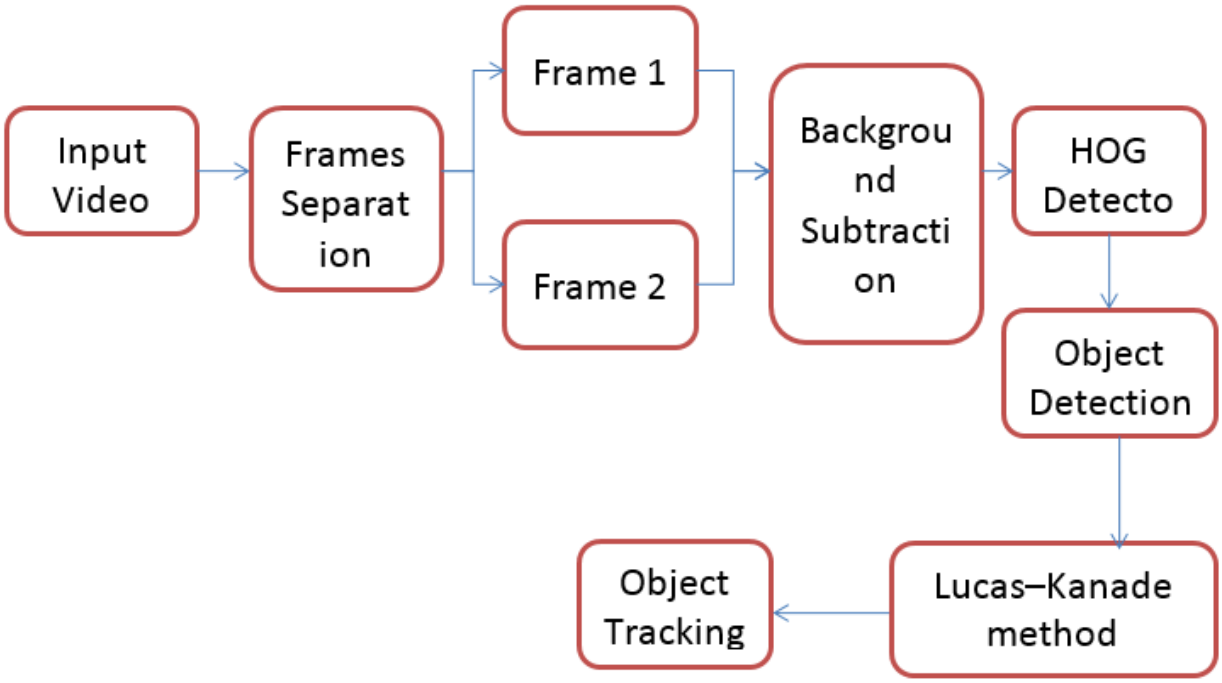
vision and pattern recognition focused on pedestrian detection in static images. CVPR made a test to include human detection in videos and variety of common animals in static imagery.

The image is divided into cells and pixels within each cells were the HOG is compiled. It is invariant to geometric and photometric transformation. The HOG descriptors is practically used for detecting humans in images. The image reprocessing will ensure the normalized colour and gamma value.

The first common method is a derivative mask to point in both horizontal and vertical directions based on 1D centred. It filter the colour and intensity data of the image. It can be used in other masks called sobel mask or diagonal mask but it cannot give the accuracy in detecting images of human the second step of calculation is creating the cell histogram, these values are found in gradient computation. The cells can be a rectangular or radial in shape were the histogram channels spread over 0 to 180 degree or 0 to 360 degree depending on whether the gradient is unsigned or signed in this test gradient magnitude will give the best result.

3. SYSTEM DIAGRAM

Frame is the collection of images which compose the complete moving pictures. It separates into two frame where the frame 1 is the reference frame and frame 2 is the current frame. It tests the quality of background detection.



The process of HOG is to test the colour and intensity and the gradient magnitude. It overcome with the best result in object detecting and tracking.

4. TRACKING METHOD

Accuracy and robustness are the two components for effective Tracking. To resolve the problem we use Lucas-Kanade algorithm of pyramidal implementation for tracking. It provides optimal flow computation and

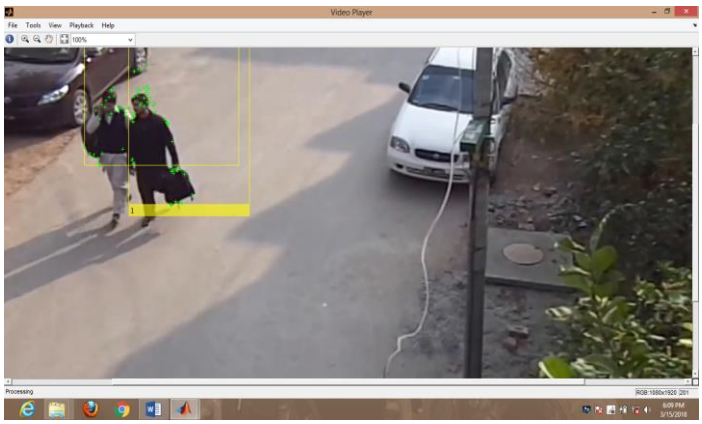
sufficient local tracking. It reduces the resolution of the images to process seamlessly. This is done when two frames are hold by optimal flow minimizes the pixel spacing. It can in both 2D and 3D motion pictures. Motion estimation techniques used in target tracking system to capture a motion in forward, horizontal and rotational views. Motion segmentation is used to identify the object moving in the frame. Intensity is given to each pixel and does not require particle filter. The weighting system have two modes which is used for tracking system.

5. SIMULATION TOOL USED

Matrix Laboratory is Multi-paradigm numerical computing environment. It allows matrix manipulation. It is used to plot the functions and data. It is used to implement the algorithms. It interfaces with other programing languages like C, C++, C#, Java, Fortran and Python. It uses the MuPAD symbolic engine as an optional tool box to access the symbolic computing abilities. It comes from various backgrounds of engineering science and economics. MATLAB JIT does not support MATLAB structure, therefore it will appear more cost. It supports Graphical User Interface (GUI) for graphically designing development environment. It has features of tightly integrating graph plotting. It produces 3D functions as surf plot3 and mesh. It is also used in scientific and engineering graphics. It is used in the application of data analysis, exploration and visualization.

6. SIMULATION OUTPUT

Background Subtraction



Pedestrian detection and tracking

7. COMPARISON OF RESULTS

Distance (Existing method)	Distance (Proposed method)
96.91	97.04
97.33	97.53
97.76	97.89
99.01	99.46
99.14	99.85

Table 1 Comparison of Distance

Velocity (Existing method)	Velocity (Proposed method)
211.57	213.33
214.68	216.27
211.66	211.69
209.3	210.5
205.91	205.99

Table 2 Comparison of Velocity

Timing (Existing method)	Timing (Proposed method)
0.4557	0.439
0.4557	0.439
0.4557	0.439
0.4557	0.439
0.4557	0.439

Table 3 Comparison of Time

8. CONCLUSION

In this Proposed Pedestrian detection system is achieved through cascade classifier framework where its detection rates are competitive with some of the best methods to date in terms of both performance and running time. The tracking method is responsible for tracking the face by distinctive features. Optical flow algorithm is used to track objects. With this Histogram of gradient proposed method object tracking speed is increased. Hence this method can be used for various applications that involves object tracking.

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