

can also be used as a general purpose parallel programming language. The VHDL language has constructs that can express the concurrent or sequential behavior of a digital system. It also allows the system as an interconnection of components. Test waveforms can also be generated using the same constructs. It is not application language. It cannot directly process on video, so we are giving video input via MATLAB, so that it get converted from.avi(video format) in to the VHDL format. The VHDL code will perform background subtraction, object detection and tracking and creates the output file which will be given to the MATLAB for playing.

4. Background Subtraction

The background subtraction is very popularly and commonly used method for the detection of motion. For detection of the motion difference between the current frame and the background frame are taken in this technology [11], and generally it is able to provide data with object information. The Background Subtraction Algorithm is used to detect moving objects in video frames from a fixed camera. The reference background frame is subtracted from the current frame. If pixels difference is greater than the threshold value T, then it determines that the pixels are from the moving object, otherwise, it is background pixels. Reference background frame is the first frame and current frame is the frame under processing.

By applying background subtraction algorithm we will get the background frame as $I_1(x, y)$ and a current frame as $I_2(x, y)$, then subtract the background image $I_1(x, y)$ from the current frame $I_2(x, y)$. If the pixel difference is greater than threshold value T, then it determines that the pixels from the moving object, otherwise, as the background pixels. This Technique is very commonly used for motion detection because of its simplicity.

$$D(X, Y) = \begin{cases} 1 & \text{if } |I_2(X, Y) - I_1(X, Y)| > T \\ 0 & \text{Others} \end{cases}$$

Where, T is a threshold, which decides the pixel whether it is foreground or background. If the difference is greater than or equal to T, the pixel is consider as foreground; otherwise the pixel is as background.

5. Experimental Result

Automated surveillance systems have critical importance for the field like security, behavior detection, computer vision etc. Our work focusing on generation of frame and detect moving objects and generate reliable tracks from real-world surveillance video. Following figures shows results for moving object detection using Reference Background subtraction. Here we used static camera to capture video images. MATLAB is a simple an event driven simulation tool which provides a platform to analyze the static and dynamic nature of the video processing.

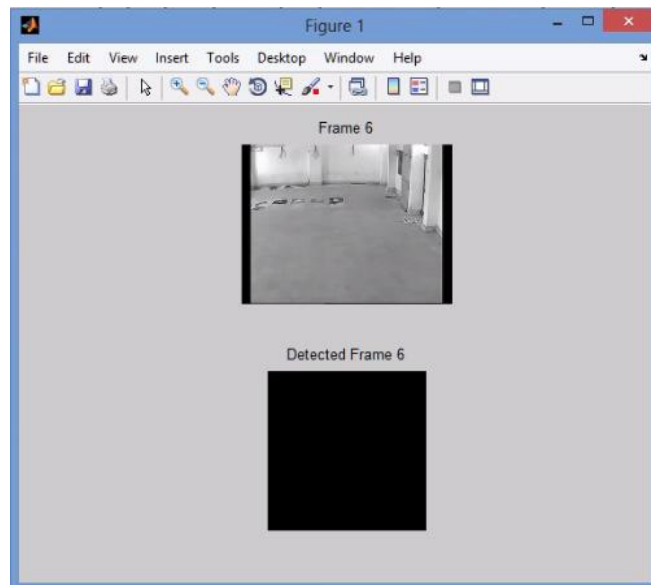


Figure 2: Background Subtraction

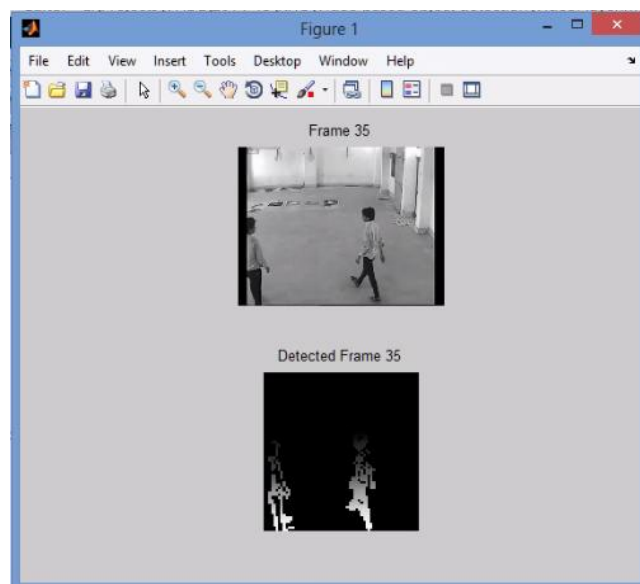


Figure 3: Moving Object Detection

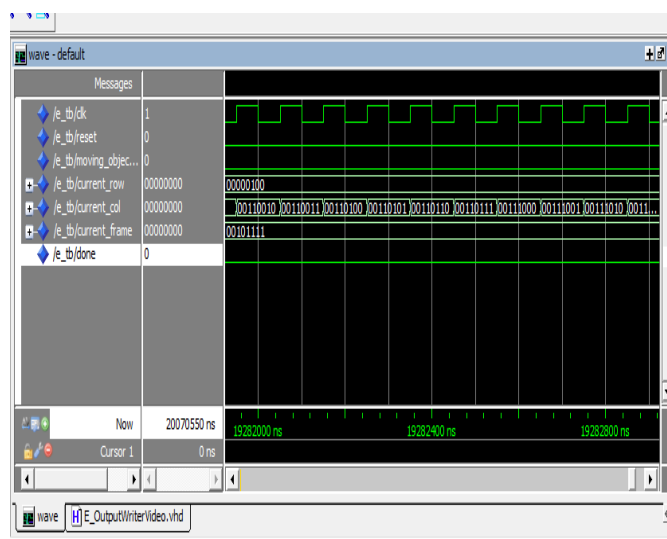


Figure 4: Simulation Result

6. Conclusion and Future Scope

Object detection and tracking requires the use of an efficient signal processing system. A real-time detection method for moving object detection and Tracking proposed based on reference background subtraction. And this method use threshold value to obtain a more complete moving object. Here in this project, we present the background subtraction method for motion detection of object. Video processing is achievable on serial processors, it can be beneficial to take advantage of the, low cost, and low power consumption. We have demonstrated this by designing a simple video which contains an object in motion. It can handle object detection in indoor and outdoor environments, this algorithm is very fast and uncomplicated, able to detect moving object better and it has a broad applicability. This method is very reliable and mostly used in video surveillance applications.

In future work includes identification of the personal using face, palm recognition. Identify moving object when video captured by moving camera. Activity recognition is an important steps in visual surveillance system so that identify the behavior of the person can be done is our future task.

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