Chapter 6
Conclusions

Moving object detection and tracking has a wide variety of applications in computer vision such as video surveillance and monitoring, video compression, vision-based control systems, human-computer interfaces, medical image processing, virtual and augmented reality, robotics etc. Moreover, this technique provides input to higher level vision-based tasks, such as representation and reconstruction of 3D images. It also plays an important role in content-based indexing and retrieval in video databases. These have been discussed in Chap. 1 for video processing along with object detection and tracking.

Chapter 2 of the text presents an overview of different techniques for moving object detection from video, namely background subtraction, temporal differencing, statistical methods and optical flow. This chapter also states some of the challenges faced by researchers in computer vision-based moving object detection. All of the common challenging aspects have been given in this chapter in detail with emphasis on: illumination changes, dynamic background, presence of shadows, motion of the camera, video noise, speed of the moving objects and the challenging weather conditions.

In Chap. 3, a brief review of the literature on the existing techniques on moving object detection is presented. The state-of-the-art review finds that there still exists gaps in devising some effective ways of removing background from an image.

Chapter 4 presents a new method for moving object detection using background subtraction for dynamic scenes. The method is tested on a benchmark video data set. The new approache has been discussed with examples and the results are presented to the readers. Comparative quantitative performance analysis reveals the effectiveness of the new method compared to someother standard methods in the literature.

Chapter 5 summarizes some of the widely used benchmark public databases for research in moving object detection, tracking and activity recognition.

However, the subject of detection and tracking of objects from video in a robust manner and in real time is still a open research problem. It needs improvement in the state-of-the-art technology towards a practical, automated and robust way to overcome the typical challenges and problems related to background subtraction in the context of video surveillance. Research is still going on towards a better method that handles all types of real-life problems associated with the same.

S. H. Shaikh et al., *Moving Object Detection Using Background Subtraction*,
SpringerBriefs in Computer Science, DOI 10.1007/978-3-319-07386-6_6,