

**CAPTURE AND ESTIMATE THE SPEED OF THE OBJECT FOR  
REMOTE MONITORING**

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## **ABSTRACT**

The webcam is normally used for recording and capturing the image to sending a live video over conference calls or uploading the image to the social network. However, the use of webcams is seldom used for recognition of an object. In this work, the webcam is considered as Close Circuit Television (CCTV). Besides that, this work can applied in the traffic police to monitor the speed of vehicles in normal roads. The webcam is employed to analyse the type of object and detected the speed of an object. The USB webcam and Matlab & Simulink are utilized to design a system for of the vehicle movement monitoring system. A USB webcam is employed to record the vehicles as well as object movement respectively.

The software used to record the movement and tracking the object is computer vision and image processing. The software is tested when there is movement as the camera captured the image. The video processing in computer vision is used to record the video when has motion in video. After that, the video is analysed in the image processing using optical follow technique. For any changes pixel in the video are recorded and it was analysed using the optical flow image processing. The optical flow used Kanade Lucas Algorithm method to track the vehicle movement in the video. After tracking the vehicle, the centroid is used to determine the location of a vehicle at a given frame. Then, the Euclidean method is used to calculate the distance between the pixels to estimate the speed. The speed is only changed when the pixels are changed.

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# **CHAPTER 1**

## **INTRODUCTION**

This chapter to introduce the concept of the project, which is a brief background for the estimation speed of the vehicle. Several problem statement, objectives of the project, and scope of limitation also the thesis outline.

### **1.1 INTRODUCTION**

The classification of objects in complex, natural scenes is considered a difficult task [1]. The objects recognition and detection is a process for tracking and capturing [2]. The detection of moving objects and motion-based tracking are important for activity such as image recognition, automotive safety and traffic monitoring. Furthermore, adding the speed of an object will be significant if the speed of the image can produce additional information [2] [3].

Hence, in this work the detection and recognition concept will employ the USB webcam. The USB webcam will record the image when there is motion in a specific area. Additionally, the detection and speed of the object are recorded. The image will use image processing and computer vision system technique [2] [4]. Furthermore, the image processing toolbox is used for the object analysed when USB webcam record the changed of background in the video.

In computer vision, separation seemly refers to the process of splitting a digital image into several pieces (sets of pixels). The aim of separation is to change the illustration of an image into roughly that is more significant and easier to analyse. This technique is suitable to identify the moving object. Therefore, the motion estimation in computer