

ABSTRACT

Motion detection system represents a system that capable to detect the motion that happened in video. Motion detection is an important subject in the field of computer vision used by many systems at video surveillance, traffic monitoring, video compression, speed measurement and so on.

This final project researches a system which can be applied to measure the speed of vehicle in a sequence of video frames by using a single camera. Measurement of this speed uses motion detection system with frame difference method. Some tests have been conducted by capture real-life data and the results were presented. Tests of this system use 18 single object videos, 6 double object videos, and 2 traffic videos. Tests of this system are conducted at various speeds like 10 km/hour, 20 km/hour, 30 km/hour, 40 km/hour, 50 km/hour, and 60 km/hour. Tests are conducted at differ light intensity those are morning, noon, and evening. The videos are took from side which the height of camera almost the same with the height of vehicle. Multiple object problems and noisy in data are also considered. The system can accurately evaluate the position and the orientation of motion object. The transformations and calibration between the 2D image and the actual road are also considered.

Result from the implementation of this system are how this system can detect, track and count, and estimate the speed of motion object with the mistake level in process as small as possible. Election the right of value of threshold and usage the right of frame rate of video are expected can give optimal performance. Result of the test show optimum result when using threshold 25 and using default of frame rate in camera at 15 fps.

Keywords: *Motion Detection, Video, Frame, Speed of Motion Object, Frame Difference Method*