

## عنوان مقاله:

An Alternative Vehicle Counting Tool Using the Kalman Filter within MATLAB

## محل انتشار:

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## خلاصه مقاله:

This study proposes an alternative and economical tool to estimate traffic densities, via video-image processing adapting the Kalman filter included in the Matlab code. Traffic information involves acquiring data for long periods of time at stationary points. Vehicle counting is vital in modern transport studies, and can be achieved by using different techniques, such as manual counts, use of pneumatic tubes, magnetic sensors, etc. In this research however, automatic vehicle detection was achieved using image processing, because it is an economical and sometimes even faster option. Commercial automatic vehicle detection and tracking programs/applications already exist, but their use is typically prohibitive due to their high cost. Large cities can obtain traffic recordings from surveillance cameras and process the information, but it is difficult for smaller towns without such infrastructure or even assigned budget. The proposed tool was developed taking into consideration these difficult situations, and it only requires users to have access to a fixed video camera placed at an elevated point (e.g. a pedestrian bridge or a light pole) and a computer with a powerful processor; the images are processed automatically through the Kalman filter code within Matlab. The Kalman filter predicts random signals, separates signals from random noise or detects signals with the presence of noise, minimizing the estimated error. It needs nevertheless some adjustments to focus it for vehicle counting. The proposed algorithm can thus be adapted to fit the users' necessities and even the camera's position. The use of this algorithm allows to obtain traffic data and may help small cities' decision makers dealing with present and future urban planning and the design or installation of transportation systems.

## کلمات کلیدی:

Image Processing; Kalman Filter; Automated vehicle Detection; Traffic Densities Counting; MATLAB

## لینک ثابت مقاله در پایگاه سیویلیکا:

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