**Vehicle Counting and Detection**

**Introduction**

In order to calculate traffic congestion on highways, vehicle detection and counting are critical. The basic purpose of the Vehicle detection and counting in traffic video project is to create a mechanism for automatically detecting and counting vehicles on highways. A technology has been created to efficiently detect and count moving vehicles. For the development of autonomous intelligent transportation systems, intelligent visual surveillance for road vehicles is a critical component. The entropy mask method does not require any prior experience with extracting road features from static photos. Vehicle detection and tracking in surveillance video employing segmentation and initial background subtraction with the morphological operator to discover prominent regions in a sequence of video frames. Edges are counted to determine how many areas are of a specific size, which is subsequently applied to car areas is locate the points and counting the vehicles in the domain of traffic monitoring over highways.

**Background**

In the field of automotive object detection, deep convolutional networks (CNNs) have had incredible success. CNNs are excellent at learning image features and can perform a variety of tasks relating to classification and bounding box regression. There are two types of detecting methods that can be used. The two-stage method uses multiple algorithms to build a candidate box for the object, which is then classified using a convolutional neural network. The one-stage technique does not create a candidate box; instead, it changes the object bounding box positioning problem into a regression problem for processing. Region-CNN is used in the two-stage approach (R-CNN) uses selective region search in the image. The image input to the convolutional network must be fixed-size, and the deeper structure of the network requires a long training time and consumes a large amount of storage memory. The traditional machine vision method has a faster speed when detecting the vehicle but does not produce a good result when the image changes in brightness, there is periodic motion in the background, and where there are slow moving vehicles or complex scenes. Advanced CNN has achieved good results in object detection; however, CNN is sensitive to scale changes in object detection.

**Evaluation of the Case**

Tacking and counting vehicles for high quality films is the major goal of the Vehicle detection and counting from video sequence approach. Our technology is primarily concerned with tracking the detected vehicle and calculating the overall number of vehicles in videos. Camera motions are a problem when the camera's field of vision is unstable.

**Proposed Solution/Changes**

One of the most difficult aspects of Vehicle detection and counting is camera motion. When there is motion in the camera’s field of view, like the video captured by unstable or vibrating cameras, processing video becomes a difficult task. The effect of this phenomena is usually represented as motion blur in the video scene, which affects both detecting and tracking steps more difficult. Motion blur may be avoided by temporal de-blurring or estimating a single motion blur kernel for the entire image. And position the camera in a place that is less likely to be affected by environmental causes such as the wind.

**Recommendation**

This project focus in a new vehicle counting method based on multi-vehicle detection and tracking video sequence. As a result of the particularity of monitoring visual angle and vehicle operation mode in highway video sequence, and constructed a new vision-based counting dataset including vehicle classification and labeling rule definitions, that show vehicle detection method had higher detection efficiency and accuracy.