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Estimating the queue length at street intersections by using a movement feature space approach

Pablo Negri[1,2]

[1]*CONICET, Av. Rivadavia 1917, Buenos Aires, Argentine*
[2]*Instituto de Tecnologia, UADE, Lima 717, Buenos Aires, Argentine*
E-mail: pnegri@uade.edu.ar

Abstract: This study aims to estimate the traffic load at street intersections obtaining the circulating vehicle number through image processing and pattern recognition. The algorithm detects moving objects in a street view by using level lines and generates a new feature space called movement feature space (MFS). The MFS generates primitives as segments and corners to match vehicle model generating hypotheses. The MFS is also grouped in a histogram configuration called histograms of oriented level lines (HO2 L). This work uses HO2 L features to validate vehicle hypotheses comparing the performance of different classifiers: linear support vector machine (SVM), non-linear SVM, neural networks and boosting. On average, successful detection rate is of 86% with 10^{-1} false positives per image for highly occluded images.