Comparative Analysis and Detection of Street Parked Vehicles using Spatiotemporal Maps and Corner Detection Methods

Abstract

Traffic control and efficient use of existing infrastructure are key challenges in recent time. This work carries out comparative analysis of various corner detection methods in different conditions, to detect presence of parked vehicles in street lanes. Different algorithmic implementations are used, to detect corners over targets in video stream and then classify them over a spatio-temporal analysis maps to identify parked vehicles. The system has been evaluated using i-Lids public dataset and has proven to be robust against common difficulties found in Closed Circuit Television (CCTV) such as high noise levels, varying illumination and the presence of momentary occlusion by other vehicles. This could be used to detect illegal and double-parked vehicles in metropolitan areas and to detect incidents on roads with lanes.

This paper implemented three corner detection algorithms, Harris, SIFT and FAST and analyzed the comparative performances of all three implementations over different parameters viz. precision, recall, false alarm and then conclude on best performing algorithm. The comparative results are presented.
References


11. Mei H., A. Sethi, Y. Gong. A Detection Based Multiple Object Tracking Method. NEC Laboratories America, Cupertino, CA, USA.

12. Konstantinos G. Derpanis. The Harris Corner Detector.


Index Terms

Computer Science
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Keywords

Parked vehicle detection, corner detection, object classification, spatiotemporal analysis, and video analysis.