

Optical Flow Based System for Cross Traffic Alert

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Abstract : This document describes an advanced system and methodology for Cross Traffic Alert (CTA), able to detect vehicles that move into the vehicle driving path from the left or right side. The camera is supposed to be not only on a vehicle still, e.g. at a traffic light or at an intersection, but also moving slowly, e.g. in a car park. In all of the aforementioned conditions, a driver's short loss of concentration or distraction can easily lead to a serious accident. A valid support to avoid these kinds of car crashes is represented by the proposed system. It is an extension of our previous work, related to a clustering system, which only works on fixed cameras. Just a vanish point calculation and simple optical flow filtering, to eliminate motion vectors due to the car relative movement, is performed to let the system achieve high performances with different scenarios, cameras and resolutions. The proposed system just uses as input the optical flow, which is hardware implemented in the proposed platform and since the elaboration of the whole system is really speed and power consumption, it is inserted directly in the camera framework, allowing to execute all the processing in real-time.

Keywords : clustering, cross traffic alert, optical flow, real time, vanishing point

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