Title: Object Detection and Distance Identification Android Application For Automobiles

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ABSTRACT

This thesis focuses on implementing an algorithm to provide a real-time android application that detects an object without using any sensors and identifies an object's distance. A cascade of boosted classifiers is used, specifically, Haar-like feature where Adaboost have been observed. Given the sequences of images, the algorithm finds features in order to detect objects using an android device to replace expensive dedicated devices. The objects that will be detected includes static and moving objects. The distance of an object is estimated using a simple trigonometry, directly displaying when detection occurred. This trigonometric method includes the identification of the viewpoint angle between the camera and the detected object. The system produces real time video display of the rearview of an automobile to the device, with its camera from its main device and connected through a ribbon cable (with a particular number of conducting wires, depending on the camera phone). This system deals with the vehicle external environment; thus, the detached camera is placed in the bumper of the vehicle to capture at least 150 degrees of its rearview.

Keywords: Haar-like Feature, distance estimation, rearview, angle