



Traffic Sign Recognition using YOLO Architecture for Autonomous Driverless Vehicles

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ABSTRACT- Traffic sign detection is a topic in computer science and language technology with the goal of interpreting traffic signs via mathematical algorithms. Traffic sign recognition has high industrial potential in Driver Assistant System and Intelligent Autonomous Vehicles. There are two tasks in a typical traffic sign recognition system: finding the locations and sizes of traffic signs in natural scene images (traffic sign detection) and classifying the detected traffic signs into their specific subclasses (traffic sign classification). Its real-time performance is highly desirable in addition to its recognition performance. This paper aims to deal with real-time traffic sign recognition, i.e., localizing what type of traffic sign appears in which area of an input image at a fast processing time. To achieve this goal, we first propose an extremely fast detection module. Our detection module is based on traffic sign proposal extraction and classification built upon a Deep learning architecture called You Only Look Once (YOLO) Algorithms. Then we use mean subtraction algorithm to eliminate the background and to segment the foreground. Then, we use neural network algorithm to further classify and recognize the different traffic signs.

I. INTRODUCTION

Traffic signs may be divided into different categories according to function, and in each category they may be further divided into subclasses with similar generic shape and appearance but different details. This suggests traffic-sign recognition should be carried out as a two-phase task: detection followed by classification. The detection step uses shared information to suggest bounding boxes that may contain traffic-signs in a specific category,

while the classification step uses differences to determine which specific kind of sign is present (if any). (We note that the words 'detection' and 'classification' have different meanings in the general object recognition community where, as exemplified by the ImageNet competition, classification means giving an image a label rather than an object, and detection means finding the bounding box of an object in a specific category.)

Traffic sign recognition has high industrial potential in Driver Assistant System and Intelligent Autonomous Vehicles. There are two tasks in a typical traffic sign recognition system: finding the locations and sizes of traffic signs in natural scene images (traffic sign detection) and classifying the detected traffic signs into their specific subclasses (traffic sign classification). Traffic signs are designed with regular shapes and conspicuous colors to attract human drivers' attention so as to be easily captured by human drivers. However, there are many difficulties for identifying traffic signs by computer algorithms due to illumination changes, color deterioration, motion blur, cluttered background and partial occlusion, etc.

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Assistant System and Intelligent Autonomous Vehicles. There are two tasks in a typical traffic sign recognition system: finding the locations and sizes of traffic signs in natural scene images (traffic sign detection) and classifying the detected traffic signs into their specific subclasses (traffic sign classification). Its real-time performance is highly desirable in addition to its recognition performance

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