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Chapter 14 Machine Learning Approach in Traffic Sign Recognition

Sujata Chakravarty, Shreela Dash and Shivani Nanda

Centurion University of Technology & Management, Odisha, India

Abstract

Traffic signs are an integral part of our road infrastructure. They provide critical information, sometimes compelling recommendations, for road users, which in turn requires them to adjust their driving behaviour to make sure they adhere to whatever road regulation currently enforced. Without such useful signs, we would most likely be faced with more accidents, as drivers would not be given critical feedback on how fast they could safely go, or informed about road works, sharp turn, or school crossings ahead. In our modern age, around 1.3M people die on roads each year. This number would be much higher without road signs. Naturally, self-driven vehicles must also abide by road regulations and understand traffic signs. Traditionally, standard computer vision methods were employed to detect and classify traffic signs, but these required considerable time-consuming manual work to handcraft important features in images. In this study, deep learning technique has been proposed to create a model that can reliably classify traffic signs and learn to identify the most appropriate features. There are many different types of traffic signs and signals like speed limits, no entry, humps, turn left or right, children crossing, no passing of heavy vehicles, etc. This paper proposes to use ResNet 50 of Convolutional neural networks technique to classify and detect images.

Keywords: Convolutional Neural Network; ResNet 50; ANN