



**Graphic Era**  
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# **Traffic Sign Recognition**

## **Using**

## **Deep Learning & Image Processing**

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## What is Traffic Signs Recognition?

There are several different types of traffic signs like speed limits, no entry, traffic signals, turn left or right, children crossing, no passing of heavy vehicles, etc. Traffic signs classification is the process of identifying which class a traffic sign belongs to. In this project, we will build a deep neural network model that can classify traffic signs present in the image into different categories. With this model, we are able to read and understand traffic signs which are a very important task for all autonomous vehicles.

## Introduction:

**Deep Learning:** Deep learning is a subset of machine learning, which is essentially a neural network with three or more layers. These neural networks attempt to simulate the behavior of the human brain—albeit far from matching its ability—allowing it to “learn” from large amounts of data. While a neural network with a single layer can still make approximate predictions, additional hidden layers can help to optimize and refine for accuracy.

Deep learning drives many artificial intelligence (AI) applications and services that improve automation, performing analytical and physical tasks without human intervention. Deep learning technology lies behind everyday products and services (such as digital assistants, voice-enabled TV remotes, and credit card fraud detection) as well as emerging technologies (such as self-driving cars).

## The Dataset of Python Project:

For this project, we are using the public dataset available at Kaggle: Traffic Signs Dataset

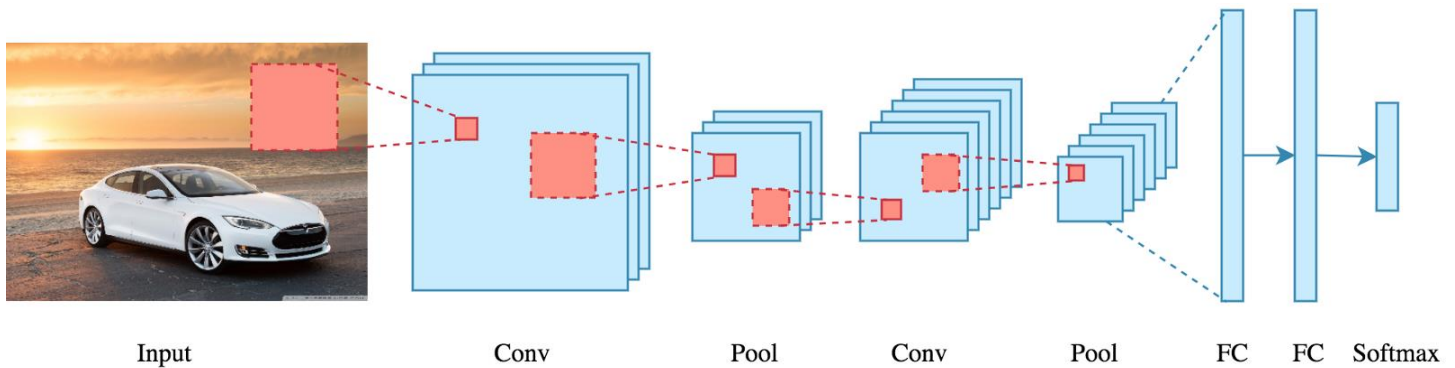
The dataset contains more than 50,000 images of different traffic signs. It is further classified into 43 different classes. The dataset is quite varying, some of the classes have many images while some classes have few images. The size of the dataset is around 300 MB. The dataset has a train folder which contains images inside each class and a test folder which we will use for testing our model.

## Prerequisites:

- Keras
- Matplotlib
- Scikit-learn
- Pandas
- PIL
- image classification.
- Tenserflow

## Algorithm Used:

**CNN:** In deep learning, a convolutional neural network (CNN/ConvNet) is a class of deep neural networks, most commonly applied to analyze visual imagery. Now when we think of a neural network, we think about matrix multiplications but that is not the case with ConvNet. It uses a special technique called Convolution. Now in mathematics convolution is a mathematical operation on two functions that produces a third function that expresses how the shape of one is modified by the other.



But we don't really need to go behind the mathematics part to understand what a CNN is or how it works.

Bottom line is that the role of the ConvNet is to reduce the images into a form that is easier to process, without losing features that are critical for getting a good prediction.

## Summary :

In this Python project with source code, we have successfully classified the traffic signs classifier with 95% accuracy and also visualized how our accuracy and loss changes with time, which is pretty good from a simple CNN model.

## REFERENCES:

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