



# Traffic Sign Classifier

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# Problem Statement

- Building a Traffic Sign Classifier with CNN using the GTSRB - German Traffic Sign Recognition Benchmark dataset.
- This will classify the input image according to the 43 Classes of Traffic Sign that are included in the dataset, which can be downloaded from Kaggle.
- The output will be in the form of indices, which will be decoded using the dictionary containing the names of the classes of the signs.



# Technology stack

- The project has been coded in Python, using Jupyter Notebooks in the Google CoLab environment.
- The dataset was downloaded using my User API Key from Kaggle and then a command in the Notebook Cell.
- The Python Input Library was used to read the images from the dataset.
- NumPy was used to store the data of images and labels in a NumPy array for computation.
- Scikit-Learn was used for train-test split and accuracy metrics.
- The multilayer CNN model was built and fit using Keras.
- Matplotlib was used to plot the graph of accuracy and loss with time.



# Conclusion

- So, as we have checked, the Model of this Classifier made using the Kaggle data and Keras works properly, with an accuracy of:
  - 98.38% on training data set
  - 99.50% on validation data set
  - 95.03% on test data set
- We also uploaded three separate images of different traffic signs, downloaded from Google into the model, and got correct predictions for them.



# Future Use in Extended Project

- I propose to use this same model in a Warning Device, in vehicles, or an AndroidAuto/CarPlay application, since most cars already come with a computer on board.
- This application will use the dashcam to read the Traffic Signs, and depending on the severity of the sign, and the speed and mode of the cars at that time, alert the driver, both Visually and Auditorily