# Traffic Sign Detection & Classification Using Deep Learning And Model Comparison.

## CSE499B.10


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# System Design

1. **Dataset Collection:** Dataset collection is the first step of a deep learning project. As our project is about traffic sign detection and classification, we need a dataset of real time images of traffic signs. So we have downloaded 740 images of German traffic signs from Kaggle as our dataset.

2. **Dataset Annotation and Labeling** : The two must needed steps for deep learning projects are dataset annotation and labeling . We have completed this step by using the roboflow. We have annotated traffic signs located in each image and labeled with their particular meanings.

3. **Dataset pre-processing :** This step is required for the pre-processing of data. By dataset pre-processing, the format of the raw dataset has been converted to the appropriate format for training of the particular model because all the models do not support the same format of dataset. Roboflow also helped us to complete this part.

4. **Architecture of model:** Different models will be used in our project which are:YOLOv5,Faster Rcnn and SSD and we will also compare their accuracy.

**5. Model Training:** Model training is the step by which models have been prepared for recognizing the objects (traffic signs). So, complete training is required for the good performance of the model.
Our training set consists of 519 images which are 70% of the total 740 images.We have to increase this training set to improve the performance of the model. We will complete some steps like augmentation to increase the number of images in the training set.

**6. Model Evaluation**: Model evaluation is another necessary part of a deep learning project. Our testing and validation set consist of 221 images which are 30% of the total 740 images.
We will use some parameters for evaluating the performance of our models which are : mean average precision (mAP) , Precision recall curves (PR) , Loss function etc.