# Assignment

# Approach

- Initially we have used **Mask Region-based Convolutional Neural Network, or Mask R-CNN model**. The model is one of the state-of-the-art approaches for object recognition tasks. The Matterport Mask R-CNN project provides a library that allows you to develop and train Mask R-CNN Keras models for your own object detection tasks.

- **LISA Traffic Light Dataset –** has been used for training and validation of the model. The Day sequence1 part of the dataset was only used for complete process.

- The dataset was divided into 80:20 ratio for training and testing set and validation has been performed using the dataset provided externally for checking the model on unseen data.

- The Annotation files consists of the masks for the frames with each of the bounding box marked with the name of the file tagged as 'Filename'.

- **TensorFlow** has been for model building and training.

# Approach

- The class Dataset in the code consists of the following functions -

- **Loading dataset** – for loading dataset images based on the source provided as dataset_dir.

- **Extracting Bounding box** – For extracting bounding boxes from the annotation file.

- **Loading Mask –** For forming a single channel mask for each object as indicated by the annotation file.

# Approach

- The model achieves an accuracy of 70% after training of the model for 20 epochs. Since the accuracy of the model was not the assessment factor, more emphasis was not given on perfecting the model.

- The Final model developed was validated using the dataset images provided for testing as unseen data.