ASTROS - ADVANCE DRIVER ASSISTANCE SYSTEM

Importing Necessary Functions and Libraries

In [2]:

```
#import openCV
import cv2
```

Vehicle Detection by analyzing Video

Detecting Two Wheelers by analyzing Video in Real Time

In [5]:

```
#harr cascade file for two wheelers
cascade_src = 'two_wheeler.xml'

video_src = input("Enter the video path: ")
cap = cv2.VideoCapture(video_src)

#cascade classifier
two_cascade = cv2.CascadeClassifier(cascade_src)

#detect the two wheelers in the video
while True:
    ret, img = cap.read()
    if (type(img) == type(None)):
        break
    gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)  #convert to gray scale
    twos = two_cascade.detectMultiScale(gray, 1.16, 1)

    #construct bounding boxes
    for (x,y,w,h) in twos:
        cv2.rectangle(img,(x,y),(x+w,y+h),(0,0,255),2)
    cv2.imshow('video', img)

    if cv2.waitKey() == 1:
        break

cv2.destroyAllWindows()
```

Detecting Buses by analyzing Video in Real Time

In [10]:

```
#harr cascade file for bus
cascade_src = 'bus.xml'

video_src = input("Enter the video path: ")
cap = cv2.VideoCapture(video_src)

#cascade classifier
bus_cascade = cv2.CascadeClassifier(cascade_src)

#detect the buses in the video
while True:
    ret, img = cap.read()
    if (type(img) == type(None)):
        break

    gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)  #convert to gray scale

    buses = bus_cascade.detectMultiScale(gray, 1.16, 1)

    #construct bounding boxes
    for (x,y,w,h) in buses:
        cv2.rectangle(img,(x,y),(x+w,y+h),(0,0,255),2)
    cv2.imshow('video', img)

    if cv2.waitKey() == 1:
        break

cv2.destroyAllWindows()
```

Detecting Cars by analyzing Video in Real Time

In [17]:

```
#harr cascade file for cars
cascade_src = 'cars.xml'

video_src = input("Enter the video path: ")
cap = cv2.VideoCapture(video_src)

#cascade classifier
car_cascade = cv2.CascadeClassifier(cascade_src)

#detect the cars in the video
while True:
    ret, img = cap.read()
    if (type(img) == type(None)):
        break

    gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)   #convert to gray scale image

    cars = car_cascade.detectMultiScale(gray, 1.1, 2)

    #construct the rectangular bounding box around the cars
    for (x,y,w,h) in cars:
        cv2.rectangle(img,(x,y),(x+w,y+h),(0,255,255),2)
    cv2.imshow('video', img)

    if cv2.waitKey() == 1:
        break

cv2.destroyAllWindows()
```