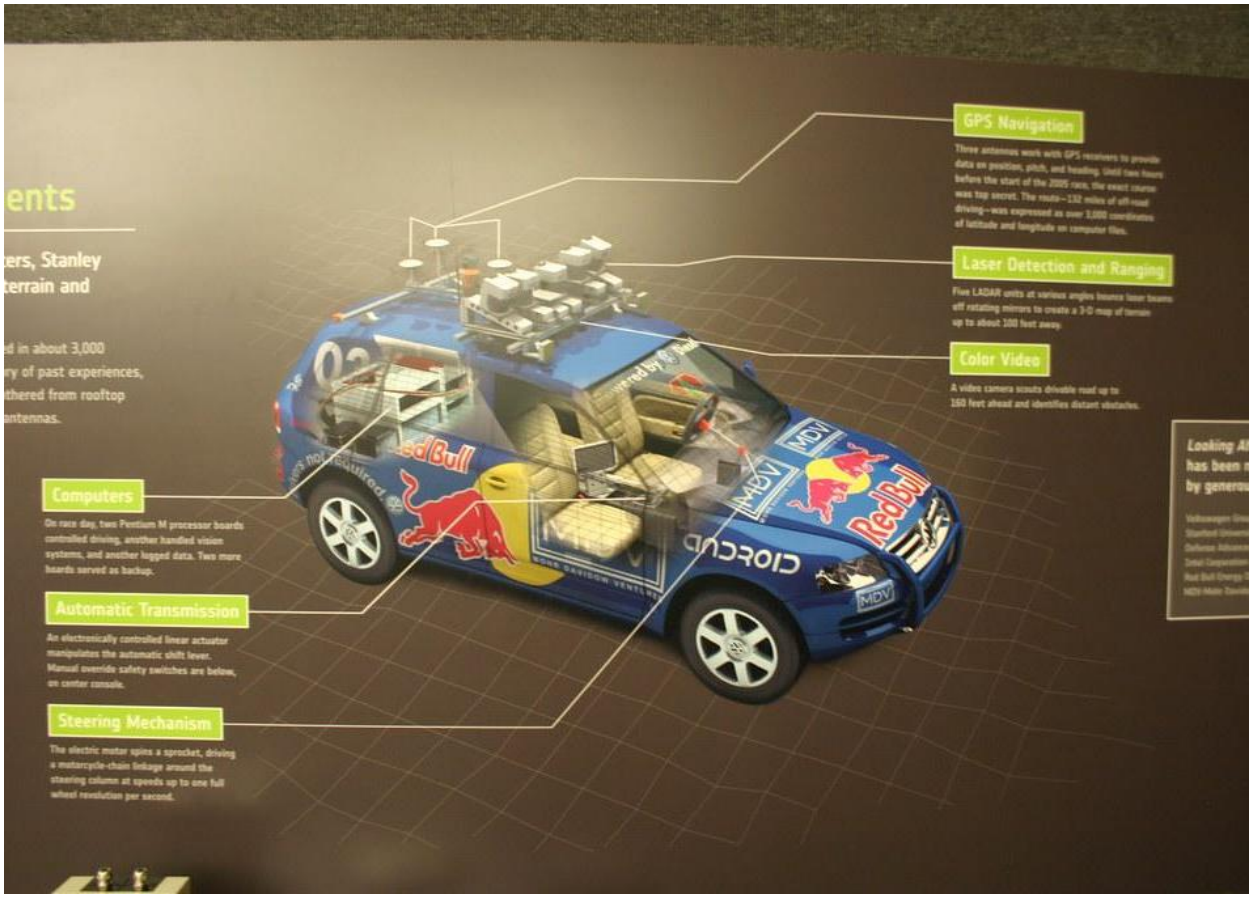
ABHIYAAN

SUBSECTION B.3:
SENSORS AND IT'S USES :



Introduction

Sensors are electronic device and they are used to sense the changes in their environment using their physical, electrical, chemical properties. Sensors play a very imp role in Navigation and guidance of autonomous vehicles.

Various Sensors used :

Dead reckoning sensors measure quantities such as position, velocity, acceleration and

Orientation of the vehicle. Rotational sensors , tachometers , gyroscope etc.. are the sensors used to predict motion . And obviously LIDAR , Camera , Radar are imp sensors to detect the environment.

Advantages and Dis-advantages :

LiDars are accurate , can be automated easily , faster and low cost for reasonable accuracy .

But at the same time high accuracy Lidars costs high and difficult to operate or improve as they have complex mechanisms.

- High-end cameras are also costly.
- For high speed vehicles the dead reckoning sensors need to be resistant to wear and tear which increases their cost .
- Radar on the other hand can't deliver us as much details as Lidars as they can detect only velocities accurately.

We use various sensors based on our need such as max speed,acc of vehicle,weather etc...

- We can't use radar alone because of low details.
- High speed and accuracy Lidars not needed for low speed cars

Sensor Fusion :

Sensor Fusion is the process of obtaining sensor data from different sensors and to provide some valuable information which has less uncertainty than the result derived from only one sensor.