**SENSOR FUSION**

Sensor fusion is the process of merging of data from various sensors (cameras, radar and lidar) to create a more accurate conceptualization ( like image ,view ) of the target scene or object.

**Idea-**

The idea behind it is that each individual sensor has both strength and weakness i.e. one sensor alone cannot describe whole present scenario of the object or target scene. Therefore, to reduce any uncertainty and leverage the strength of each sensor to obtain precise model of the environment being studied.

Hence, it aims to overcome the limitations of individual sensors by gathering and fusing data from multiple sensors to produce more reliable information with less uncertainty.

**Different Types of Sensors-**

**Camera:**

Strength**-** used to capture the images , which in turn can be used to identify objects within.

Weakness- image can be easily obscured by darkness, poor weather, dirt etc.

**Radar:**

Strength- uses radio-waves to detect objects and precisely estimate their speeds.

Weakness- Cannot indicate what object are being sensed by it.

**Lidar:**

Strength- uses infrared sensors to measure the distance between the target object and sensors.

The sensors send out waves and measure the time it takes for the waves to bounce off an object and return. This data is then used to create a 3D point cloud of the environment.

Weakness-

**Piler**

**Frustom**

**Voxel**

**2d 3ds**