**Localization:**

Localization is different from using GPS to track the location because GPS has disadvantages in many situations. Localization in self driving cars is achieved by pointing to the different objects present around the vehicle.

This type of localization is necessary because of it’s precision and a high precision can help tell where is the vehicle exactly like which lane and where in that lane.

Localization can be achieved in many ways :

GNSS RTK – Global Navigation Satellite System(GNSS) , GPS is widely used GNSS. Real-Time Kinematic(RTK) involves several base stations on ground and then measuring the difference of co-ord

Adv : Accurate

Inertial localization – Inertial Measurement Unit(IMU) has accelerometer and gyroscope to determine location

Adv : High freq and hence nearly real time

LiDAR localization – Find location using point cloud measurement

Filters like Historgram, Kalman are used to remove redundant point from the map

Visual localization – Particle filter with camera to determine the location

A combination of multiple methods like these are used to achieve localization in SDCs by taking the most of the advantages that these methods come with.