**Into to Localization**

Localization allows you to know exactly where you are in the world, which is required for an autonomous vehicles.

**Localization:** A robot takes information about an environment and compares it to known information about the real world (A map to relate too).

Ex. Getting kidnapped and seeing the Eiffel tower helps you know you are in Paris, France.

If you have a map of your world (A large area) you can find yourself in the world if you can compare your environment to the map.

Localization using GPS is not accurate enough for Self Driving Cars, which requires an accuracy of within 10cm.

We instead use our onboard sensor data and a global map to solve the Localization problem.

We use things like LIDAR and RADAR sensors to measure the distance to static obsticales in the environment like trees, poles, and walls.

With the distance and the bearing to these objects in the local co-ordinate system of the car. We can hope that the objects we detected and measured are on the map, and we can compare them. **The Map has its own co-ordinate system so matching the local cars co-ordinate system needs to be as accurate as possible.**



