

# points-frame --position: calculating vehicle trajectory from sensor trajectory

Suppose, the GPS unit on a vehicle is offset from the vehicle geometrical centre. Therefore, you most likely need to convert the GPS trajectory as 6DOF points (x,y,z,roll,pitch,yaw) to the trajectory of the vehicle centre.

The other (almost identical) use case: you have got a trajectory from Visual SLAM relative to a lidar and now want to convert it into the vehicle centre trajectory.

Now, it can be done as following:

```
> gps_unit_offset=1,2,3,0.1,0.2,0.3
> cat gps_unit_trajectory.csv | points-frame --position $gps_unit_offset --fields frame
```

In the past, in such a situation, one would need to jump through the hoops with **points-frame** as following:

```
> cat gps_unit_trajectory.csv | csv-paste - value=$gps_unit_offset | points-frame --fields frame,position | csv-
shuffle --fields ,,,,,,,,,,x,y,z,roll,pitch,yaw --output-fields x,y,z,roll,pitch,yaw
```