# Map Matching algorithm

## Design purpose

Match the raw GPS data to the corresponding road segments. So, it takes GPS signals as the input, and Positions on a road network as the output.

### GPS signals (component)

1. Latitude
2. Longitude
3. Speed (how fast it travels)
4. Course (the direction of travels)

### Positions on a road network (component)

1. Latitude (On an actual road)
2. Longitude (On an actual road)
3. Road segment ID
4. Road name
5. Direction / heading

## Why we need map matching algorithm

Reduce the noise and sparseness of raw GPS data

Chart, scatter chart

Description automatically generated

Use cases

1. Online map matching: driver position
2. “offline” map matching: Fare calculation