

FunFact: How to produce your own FC data with your smartphone

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- ▶ 4. Data analysis

1. General

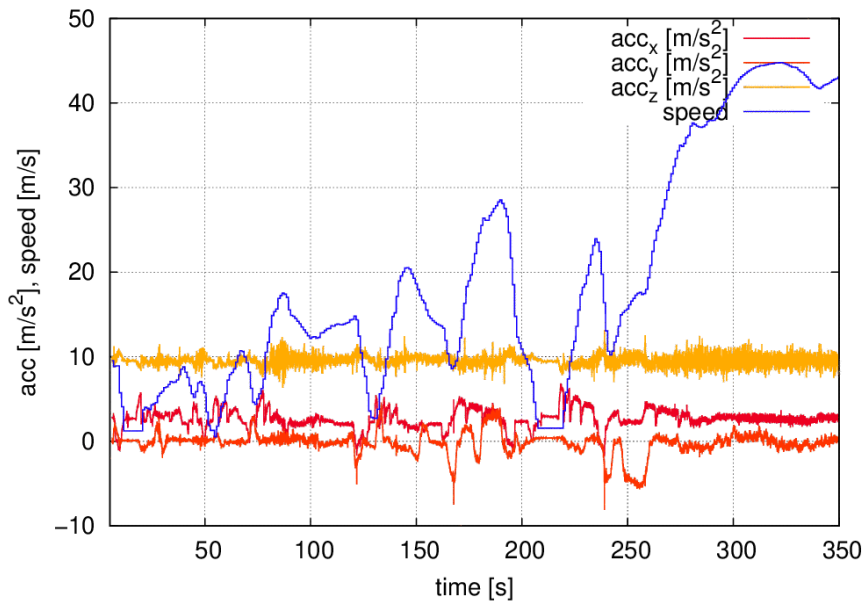
There are several apps making use of your smartphone sensors to record location, acceleration, and heading data, e.g., PhypHox



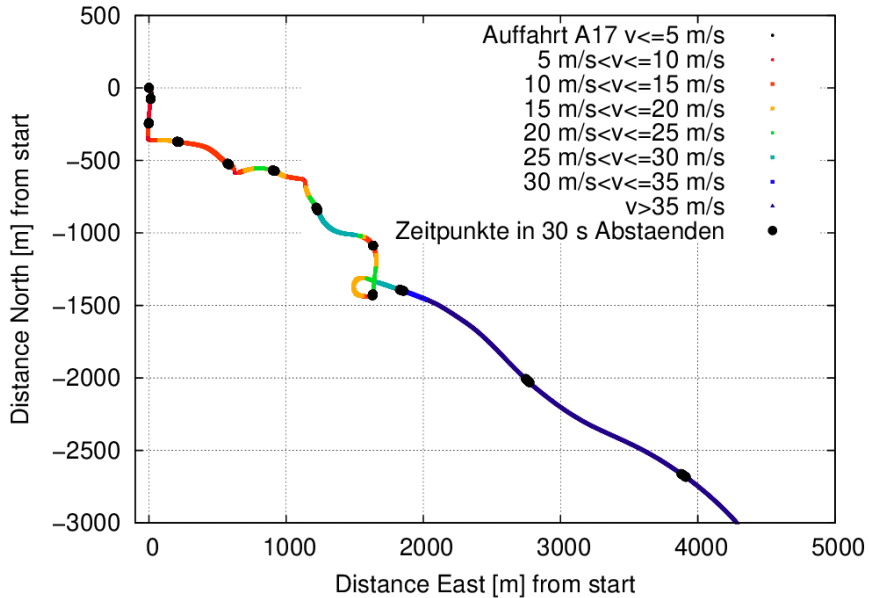
2. Raw data

```
#time  gFx    gFy    gFz    Latitude  Longitude  Speed (m/s)
6.0290 0.2835 -0.0215 0.9534 51.01982536 13.70625587 9.52999973
6.0610 0.2801 -0.0126 0.9629 51.01982536 13.70625587 9.52999973
6.0920 0.2868 -0.0053 1.0020 51.01982536 13.70625587 9.52999973
6.1230 0.2737 0.0018 0.9734 51.01982536 13.70625587 9.52999973
6.1540 0.2822 0.0200 0.9615 51.01982536 13.70625587 9.52999973
6.1850 0.2822 0.0171 0.9389 51.01982536 13.70625587 9.52999973
6.2170 0.2869 0.0354 0.9383 51.01982536 13.70625587 9.52999973
6.2480 0.2846 0.0070 0.9433 51.01982536 13.70625587 9.52999973
6.2790 0.2833 0.0282 0.9333 51.01982536 13.70625587 9.52999973
6.3100 0.2784 -0.0077 0.9639 51.01982536 13.70625587 9.52999973
6.3410 0.2868 0.0001 0.9935 51.01982536 13.70625587 9.52999973
```

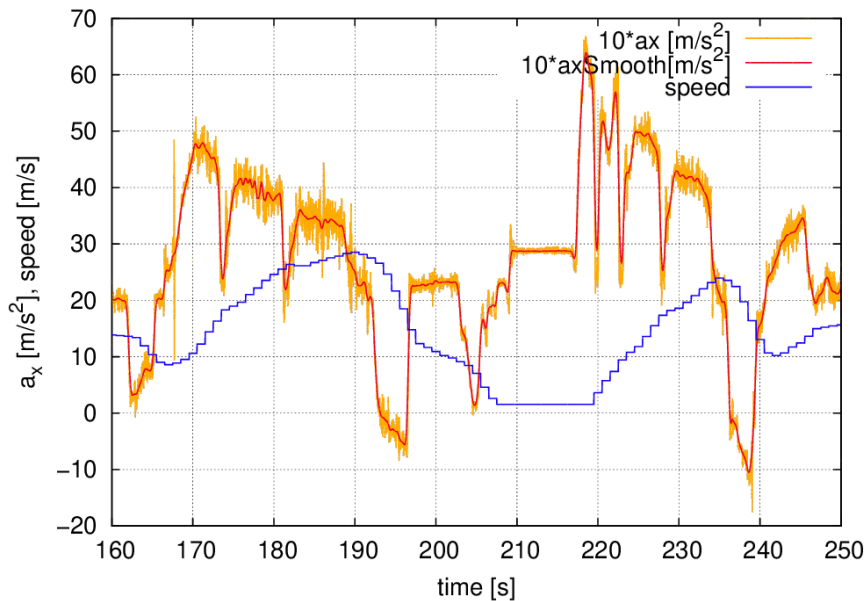
3. Visualisation of the raw data



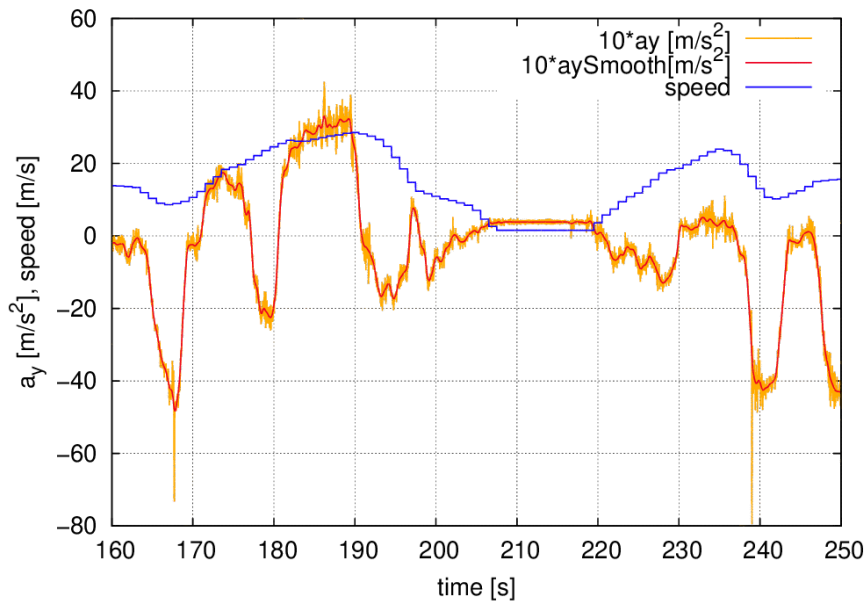
xy trajectories



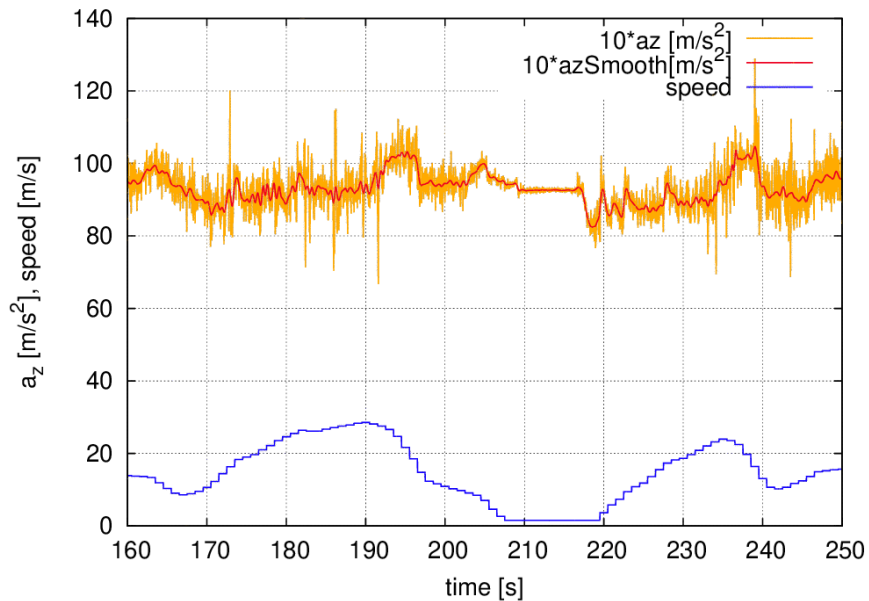
4. Data analysis: Smoothed x axis acceleration



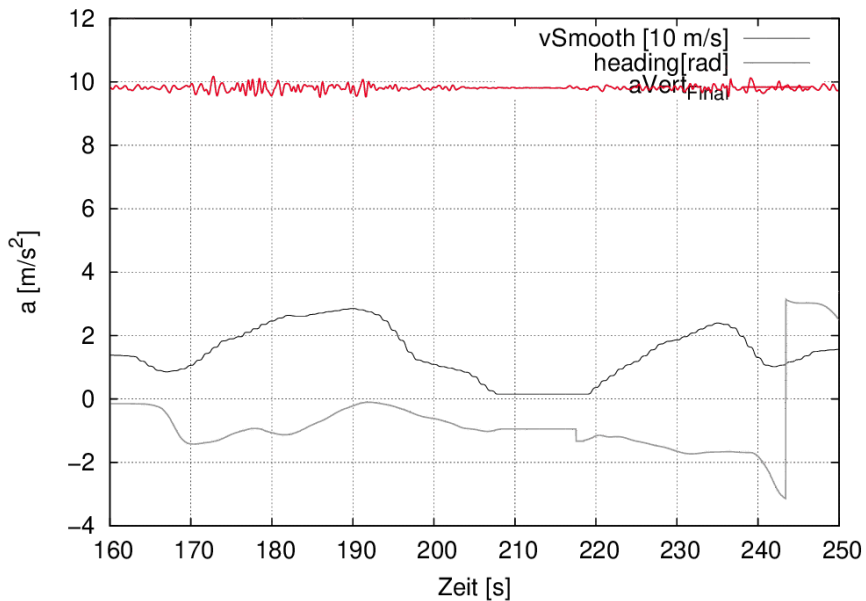
Smoothed y axis acceleration



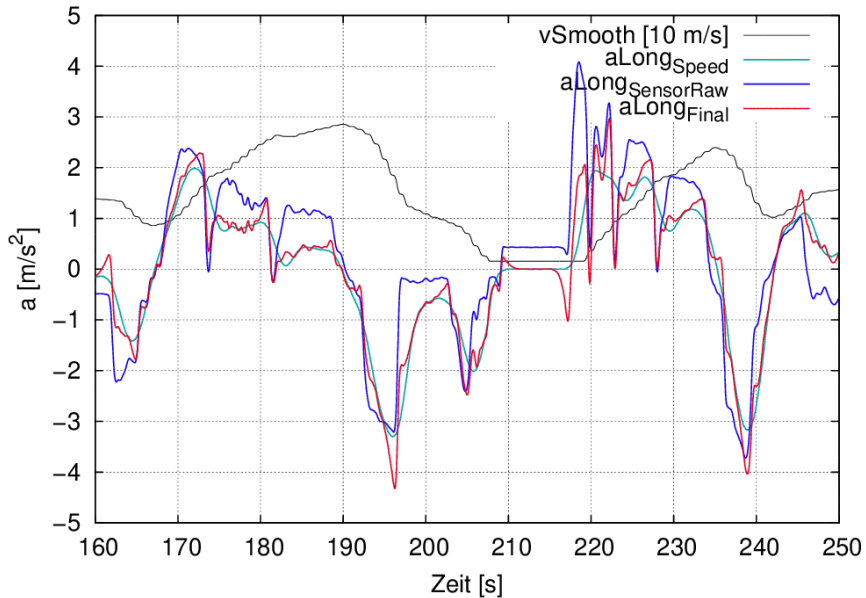
Smoothed z axis acceleration



Elimination of the component a_g parallel to g



Identification of the component $a_{||}$ parallel to the car axis



Identification of the lateral acceleration component a_{\perp}

