Using EnviroCar data in R

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R (R Core Team 2014) is a open-source software for general data analysis. It compiles and runs on a wide variety of platforms and provides a big sample of statistical and graphical methods. Furthermore, R is easily extendable through a massive amount of so-called packages. Currently, there are round about 6000 packages available on the "Comprehensive R Archive Network", short called CRAN. The number of developers and published packages are growing continuously. However, each package has got help pages, several documentations and useful example code chunks. (R-Project, 2014)

- R
- Trajectories
- Track
- Tracks
- TracksCollection
- EnviroCaR (github)
- ImportSingleTrack
- ImportEnviroCar

Aggregation

Map Matching

Map matching is the process of matching GPS trajectories to a digital road network and is done using map matching algorithms. This is necessary because positions acquired from GPS, as they are in the enviroCaR project, are affected by several kind of errors resulting in inaccurate positions on maps.
Matching the enviroCar trajectories to a digital road network would not only improve the visual representation, but could also be useful when it comes to analysis or comparison of trajectories.

One possible way of achieving this is the fuzzyMM package (Gorte 2014) which implements a fuzzy logic based map matching algorithm.
As can be seen in Figure 1 the raw GPS positions are matched to road segments after the application of the map matching algorithm.

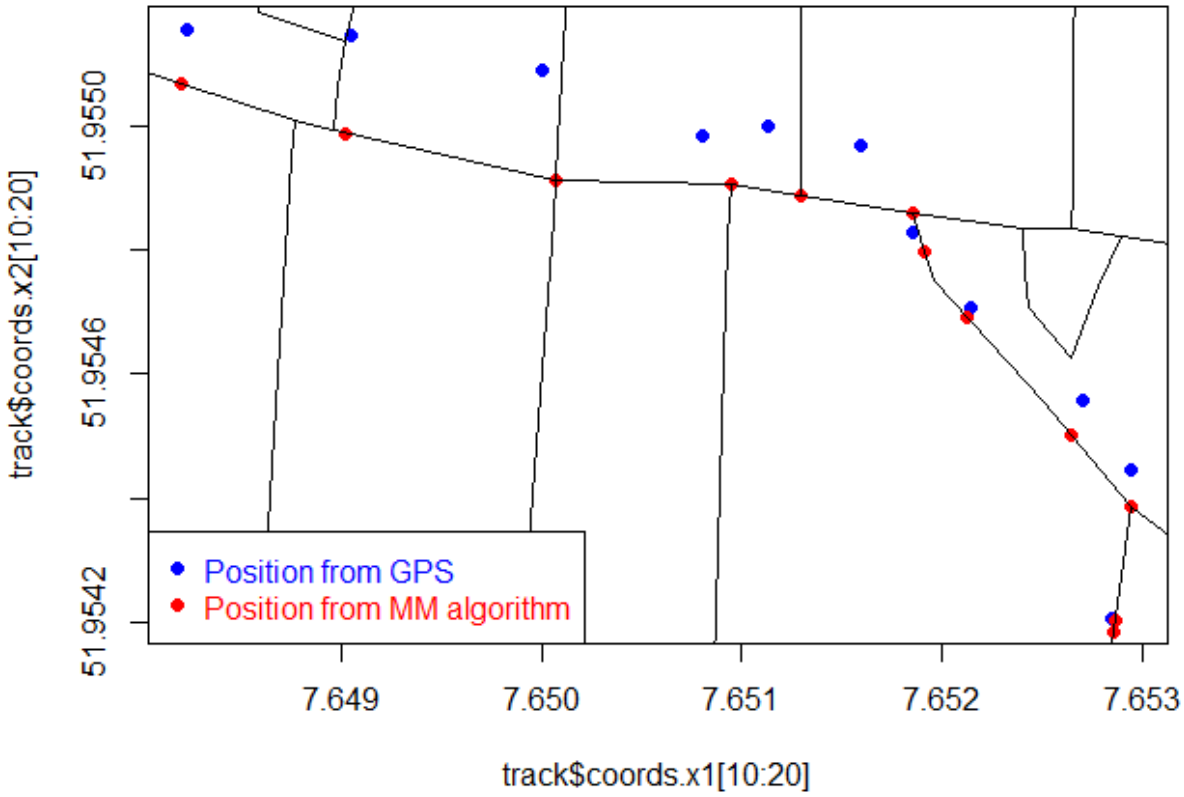

Figure 1: Map Matching

At the moment fuzzyMM only works for SpatialPointsDataFrame objects which contain the GPS positions of the track and GPS data such as HDOP, speed and bearing. Since all of this is also included in the Track class, it should be no problem to modify the function to work with the trajectorie classes.

Conclusion

References

Gorte, Nikolai. 2014. *fuzzyMM: Map Matching Using Fuzzy Logic*. http://CRAN.R-project.org/package=fuzzyMM.

R Core Team. 2014. *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. http://www.R-project.org/.