



BA/MA/SA/Group/Lab:

Low Power GPS Tracking

The availability of cheap GPS receivers has led to numerous applications. For example, most cameras now carry GPS just to store where pictures were taken. Also, there are fitness devices that can track your location and hence pace during a workout. If you are using an Android phone you are very likely carrying a GPS tracking device with you unless you changed the default settings. GPS has also been used to track animals and observe their migration patterns.

The range of applications for GPS receivers is still limited. Mostly, because long term tracking is quite energy consuming. You may have observed, that the GPS receiver in your phone draws a lot of power if you want to track your location with a high resolution for a whole day. And this is not even the worst case application scenario! GPS receivers are notoriously bad at obtaining a location fix quickly. The introduction of A-GPS in recent years helped to reduce the time required to obtain a location fix. However,



these receivers still need to run a few seconds for each new fix and require communication with a server that provides A-GPS information. This consumes so much energy that tracking devices which obtain a location fix every few hours still consume a lot of energy.

We have been working on a drastically different GPS localization algorithm. The goal of this thesis is to build the required hardware to test our algorithm in real life scenarios such as fitness- or animal-tracking.

Requirements: Creativity and hardware prototyping skills are advantageous. The student(s) should be able to work independently on this topic!

Interested? Please contact us for more details!

Contacts

- Pascal Bissig: pascal.bissig@tik.ee.ethz.ch, ETZ G95
- Manuel Eichelberger: manuel.eichelberger@tik.ee.ethz.ch, ETZ G97