Multi-System GNSS Receiver Software

Low-power devices for the Internet of Things (IoT) have very little energy and computation power available. Still, they should provide a lot of functionality to enable “smart” applications. For instance, one would always like to know where such a device is located. We try to tackle this problem using GPS, but with an approach very different from current receivers.

At our group, we developed an algorithm for a low-power GPS receiver. The receiver only samples the signal and then sends the samples to a server, which then does the processing to get the position.

The goal of this project is to implement a GNSS receiver with the capability to receive and use signals from satellites belonging to different GNSS, such as GPS, Galileo and GLONASS. Receiving signals from many satellites instead of only a few allows for greater accuracy and noise tolerance. You will implement these extensions in our existing GPS implementation, and test it with a software defined radio receiver.

Requirements: Creative thinking and familiarity with signal processing are advantageous to successfully work on this topic. The student(s) should be able to work independently!

Interested? Please contact us for more details!

Contact

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