



BA/MA/SA/Group/Lab:

GPS on a GPU

Current GPS receivers rely on ASIC implementations to deliver a maximum of performance for the energy consumed by the chip. This high level of optimization leads to very attractive GPS receivers that work quickly and consume little energy. To the benefit of applications like Geo-tagging, navigating, finding nearby bars or shops, or even online dating.

However, it is distressing that the receiver design and localization algorithms have not adapted to the raw computation power that our devices have today as compared to the 90's.

We have been working on a drastically different GPS localization algorithm. The algorithm delivers superior energy efficiency and also works well in situations with bad signal reception. However, currently we compute location fixes on a CPU in a single thread. The algorithm itself can be parallelized to a degree that a GPU implementation will lead to massive performance improvements. The goal of this thesis is to optimize the algorithm to run on a modern GPU. This will help bringing the algorithm to mobile devices or to conserve energy while reducing latency in a possible cloud implementation.



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

Interested? Please contact us for more details!

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