Semester Thesis / Bachelor Thesis

Graph Exploration

Imagine you are visiting Zurich for the first time. There are a lot of great places to see – probably even places that you have not heard about before. Since you want to explore on your own, you do not buy a map and start walking. After some time, you notice that your tour is not quite optimal, you could have visited more places if you knew the layout of the town. Of course no minute exploring Zurich is wasted, but still, how much time would a map have saved you?

In more formal terms, this can be modelled as one of the standard problems in robotics. A robot starting at a base has to visit the whole graph and return to its home. If you know the whole graph, then this is much easier than if you start with zero information about the graph.

Currently known algorithms without maps have pretty high costs compared to those with a map. However, they nearly all follow simple standard approaches, because then the estimation of their costs is easy. What if you could try your own ideas? No matter how crazy, if you can program it, then we have a first step. We can also give you a set of ideas to start with.

Requirements: Good programming skills are required. Some creativity and knowledge in graph algorithms are advantageous. The student should be able to work independently on this topic.

Interested? Come to our office for coffee and a small chat or contact us by email/phone.

Contact

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