MF2071 Literature study

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Introduction

The research question given by the company was *What are the pros and cons of different SLAM algorithms which are suitable for autonomous vehicles?*. In the thesis description, there is a stated desire for a comprehensible comparison between different SLAM algorithms, both on the performance of the algorithm and the price of the needed hardware. The final deliverable will be a comprehensive comparison of perfomance (in simulation and in real life) and the cost associated with needed sensors.

Being rather wide in scope, the research question is divided into smaller parts that each can have a specific search strategy. As previously stated, the focus is on making a comparison of different SLAM algorithms with regards to performance in different situations and the cost associated with each algorithm. The cost will depend on both the needed processing power and on what kind of inputs are needed, affecting which sensors that need to be fitted to the vehicle.The goals of the search are therefore:

1. To define what a SLAM algorithm is.
2. To (if possible) find all available SLAM algorithms.
3. To investigate theoretical performance of each.
4. To investigate what inputs and processing power are needed for each.

Search Method

Research question refinement

In hinesight of the, in Section , defined refinement method there is a huge gain in iterating the search wisely. It is likely that the results from one of the searches will contain keywords used when describing other methods. It can also be possible to discard some search results based soely on them containg specific keywords. Using multiple sources will help in getting an as complete picture of the method as possible.

Literature review and motivation

Search iteration

The initial search string used is,

(slam OR mapping OR localization OR sensing OR modeling)
AND (car OR vehicle OR agent OR uav OR robot) (1)
AND (hardware OR sensor OR processor OR input OR data)

focusing on catching as many hardware related sources as possible.

References