Common Knowledge in the Context of Service Robots

Facts

Studiengang: Master - Informatik
Betreuer: M. Sc. Stephan Opfer
Kontakt: sop@vs.uni-kassel.de

Motivation

In order to be prepared for the tasks in our department, our service robots need a lot of common knowledge. Where can I find books or cups? What is the purpose of the conference room? What does it mean, that a door is of an office is closed? All this knowledge is used by humans, without actively thinking about it. It is your job to teach this to the robot!

Task

As a basic reasoning mechanism, the robot uses an available Answer Set Programming Solver (ASP). The necessary knowledge should be extracted from the ConceptNet 5 dataset and converted into an ASP-compatible format. Afterwards, you can choose a human-robot interface for stating queries against the available knowledge. Thereby, you should investigate the following questions during your work:

- How is it possible to guarantee a consistent knowledge base while integrating ConceptNet data?
- How efficient is the reasoning with the almost complete ConceptNet dataset?
- How efficient is it, to use just a part of the ConceptNet dataset?
- Is it viable to download parts of the dataset on-demand?

Technologies: Robot Operating System, C++, Anser Set Programming, ConceptNet 5