

Mission Planning for Long-Term Autonomy in Mobile Service Robots

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Abstract:

The performance of autonomous robots, i.e. robots that can make their own decisions and choose their own actions, is becoming increasingly impressive, but most of them are still constrained to labs, or controlled environments. In addition to this, these robots are typically only able to do intelligent things for a short period of time, before either crashing (physically or digitally) or running out of things to do. In order to go beyond these limitations, robots require the ability to create and execute robust mission plans for extended autonomous behaviour in everyday environments. This talk will present our planning framework for mobile robots which provides formal guarantees on mission completion and is based on a combination of techniques from the formal methods and AI communities (including LTL, MDPs and machine learning). The framework has been used to deliver over a year of autonomous behaviour in service robots in deployments across Europe.