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Deliberation for autonomous robots: A survey

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Abstract

Autonomous robots facing a diversity of open environments and performing a variety of tasks and interactions need explicit deliberation in order to fulfill their missions. Deliberation is meant to endow a robotic system with extended, more adaptable and robust functionalities, as well as reduce its deployment cost.

The ambition of this survey is to present a global overview of deliberation functions in robotics and to discuss the state of the art in this area. The following five deliberation functions are identified and analyzed: planning, acting, monitoring, observing, and learning. The paper introduces a global perspective on these deliberation functions and discusses their main characteristics, design choices and constraints. The reviewed contributions are discussed with respect to this perspective. The survey focuses as much as possible on papers with a clear robotics content and with a concern on integrating several deliberation functions.

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