

EINLADUNG

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Thema: Robot Controllers for Highly Dynamic Environments With Real-time Constraints

Abstract The fields of mobile autonomous robotics and cognitive robotics are active research fields. While in recent years several successful applications showed that mobile robots can interact with their environment and fulfill meaningful and useful tasks, many questions on how to design autonomous mobile robots still remain open and are subject to active research in this field. For problems like navigation, collision avoidance, and localization, robust approaches have been proposed, which are widely used. On the other hand, the question how such robots can act intelligently, has wide-spread ideas and various approaches.

We propose an approach to the problem of decision making (deliberation) for robots or agents which moreover have to decide under real-time constraints in adversarial domains, i.e. multi-agent domains where opponents have contrary goals and try to foil the goals of the opposing team. We propose the language Readylog as an account to intelligent decision making in dynamic real-time domains. Readylog is a Golog family language and combines features known from other dialects in one framework. It is based on the Situation Calculus and offers probabilistically projecting a given world situation into the future or dealing with a continuously changing world. It comes with an efficient implementation and a mechanism to progress the internal database. Further, Readylog makes use of decision-theoretic planning. Several alternatives in the robot program are left open and Readylog chooses the most promising one against a background optimization theory. As decision-theoretic planning is computationally costly, we are looking for ways to reduce the complexity of planning. One possibility we propose is to make use of options, which are macro actions in the decision-theoretic context. We show detailed applications of Readylog in the robotic soccer domain.

Es laden ein: Die Dozenten der Informatik