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Map focus: A way to reconcile reactivity and deliberation in multirobot systems

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Abstract

Cooperative multirobot systems require both real-time responsiveness and some form of coordination to get the desired overall behavior. This can be obtained with a combined use of reactive and deliberative subsystems. In this paper, we illustrate an effective technique for putting together these two components. The method is based on the idea that every robot maintains a local map and then dynamically focuses its attention on the part which is relevant in the current context. The framework, which is fully distributed and scalable, is enriched with cooperative behaviors, i.e. behaviors pursued by more than one robot. We provide the details of how the proposed idea has been studied in a simulated cooperative foraging task and proved to be effective.



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Keywords

Multirobot systems; Cooperative robotics; Hybrid architectures

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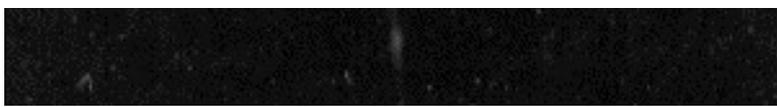
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Stefano Carpin received his “Laurea” on Computer Engineering from the University of Padova in 1999. In the same year, he enrolled to a Ph.D. program in the same university within the Intelligent Autonomous Systems Laboratory at the department of Information Engineering. In 2001, he visited the Oak Ridge National Laboratory in Oak Ridge-TN, USA, where he worked with the Computational Intelligence Group. His main scientific interests are computational robotics and distributed systems.



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