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Coordination of Distributed Fuzzy Behaviors in Mobile Robot Control

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ABSTRACT

Mobile robot navigation can be achieved using a control system comprised of a collection of special-purpose motion routines, or behaviors. In order to exhibit robust autonomous performance, a suitable strategy for coordinating, the behaviors must be adopted. This paper describes an approach to behavior coordination and conflict resolution within the context of a hierarchical architecture of fuzzy behaviors. 'l'his architecture can be viewed as a network of distributed intelligent behaviors in which coordination is achieved using weighted decision-making based on behavioral degrees of applicability. Aspects of the coordination and conflict resolution procedures that arc based on generalized concepts from fuzzy control arc discussed. The strategy is appropriate for fuzzy control of systems that can be represented by hierarchical or decentralized structures.

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