Abstract

Utilizing adaptive finite automaton (AFA) such as motion automaton, we propose an alternative for the available researches on data structures in robotics navigation, in which trajectories are made up of straight line segments. Software is modeled by a set of rules as systems of state machines to cover the complete space environment of the robot. The formalism of adaptive digitized straight line segments (ADSLS) is applied for data representation, aiming to exploit its ability to express tolerances, scalability, errors and deviations in angle or in length of segments. Consequently, ADSLS is shown by simulations to be effective to represent the complexities of real world scenarios of a robot; furthermore, it is able to adapt, reacting to circumstance stimuli in a single pass, also presenting learning capability.
Data Structures in Robot Navigation Optimized by Adaptive Straightness

1997.

**Index Terms**

Computer Science  
Automation

**Keywords**

Digital Geometry  
Robotics  
Pattern Recognition  
Automata  
Error  
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