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.

References


Index Terms

Computer Science Automation

Keywords

Digital Geometry Robotics Pattern Recognition Automata Error Recovery