Development Of Roller Based Interior Wall Painting Robot

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Abstract

This paper describes the development of an autonomous robot for painting the interior walls of buildings. The robot consists of a painting arm with an end effector roller that scans the walls vertically and a mobile platform to give horizontal feed to paint the whole area of the wall. The painting arm has a planar twolink mechanism with two joints. Joints are driven from a stepping motor through a ball screw-nut mechanism. Four ultrasonic sensors are attached to the mobile platform and used to maintain a certain distance from the facing wall and to avoid collision with side walls. When settled on adjusted distance from the wall, the controller starts the painting process autonomously. Simplicity, relatively low weight and short painting time were considered in our design. Different modules constituting the robot have been separately tested then integrated. Experiments have shown successfulness of the robot in its intended tasks.