FM02-25

Path-Planning for Cleaning Robot Using a Wall Tracing

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This paper is willing to propose a method of wall tracing, a moving algorithm between two points, when a Cleaning robot between two points moves. We use the information about obstacles and wall side in calculating different weight vector the each infrared sensors in cleaning robot. Therefore the cleaning robot navigates the wall. In the algorithm of wall tracing, the value of error in angle and distance between starting point and ending point should be zero to navigate the wall safely. The propriety of algorithm of the wall tracing is simulated as this method by using Visual C++. The result simulated proved to the simulation.

FM02-26

Object recognition system using an ultrasonic sensor array for autonomous mobile robots.

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●Introduction
●Physical model of beam pattern
●Background of ultrasonic sensor sensing
●System unit
●Experimental results
●Conclusion
●References

FM02-27

Zigzag gait of a Quadruped Walking robot with waist joint

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●Introduction
●trend of walking robot
●characteristics of waist-jointed walking robot
●simulation
●conclusion

FM02-28

A Study on Stable Grasping Control of Dual-Fingers with Soft-Tips

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This paper aims to derive a mathematical model of the dynamics of handling tasks in robot fingers which stably grasps and manipulates a rigid object with some dexterity. Firstly, a set of differential equation describing dynamics of the manipulators and object together with geometric constraint of tight area-contacts is formulated by Lagrange's equation. Secondly, problems of controlling both the internal force and the rotation angle of the grasped object under the constraints of tight area-contacts are discussed. The effect of geometric constraints of area-contacts on motion of the overall system is analyzed and a method of computer simulation for differential-algebraic equations of overall...

FM02-29

Two-Degrees-Of-Freedom Internal Model Position Control for Slave Manipulator Teleoperated by Master Arm

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Recently, the more advanced control technologies are required to deal with the fast and accurate motion in manipulators. For these requirements, many manipulator control methods have been developed such as a computed torque method. This paper proposes a design method, a two-degrees-of-freedom internal model control (TDOF IMC), of the manipulator position control based on combination of the one-degree-of-freedom internal model control (ODOF IMC) system and the disturbance observer. The proposed control scheme is implemented for the position control, which leads the slave manipulator to the desired location by the master arm. The experimental results are presented and discussed through the imp...

FM02-30

Modeling and Simulation of Nanorobotic Manipulation with an AFM probe

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It is greatly important to understand the mechanics of AFM-based nanorobotic manipulation for efficient and reliable handling of nanoparticles. Robust motion control of an AFM-based nanorobotic manipulation is much challenging due to uncertain mechanics in tip-sample interaction dominated by surface and intermolecular force and limitations in force and visual sensing capability to observe environment. This paper investigates a nanomechanic modeling which enables simulation for AFM-based nanorobotic manipulation, and its application to motion planning of an AFM-based nanorobot. Based on the modeling of intermolecular and adhesion force in AFM-based nanomanipulation, the behaviors of an AFM ca...