Control of Wheeled Mobile Robot in Restricted Environment

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Abstract. This paper presents a simulation and practical control system for wheeled mobile robot in restricted environment. A wheeled mobile robot with 3 wheels is fabricated and controlled by proportional derivative active force control (PD-AFC) to move in a pre-planned restricted environment to maintain the tracking errors at zero level. A control system with two loops, outer by PD controller and inner loop by Active Force Control, are designed to control the wheeled mobile robot. Fuzzy logic controller is implemented in the Active force Control to estimate the inertia matrix that will be used to calculate the actual torque applied on the wheeled mobile robot. The mobile robot is tested in two different trajectories, namely are circular and straight path. The actual path and desired path are compared.