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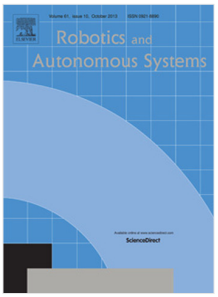

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Adaptive Modified Stanley Controller with Fuzzy Supervisory System for Trajectory Tracking of an Autonomous Armoured Vehicle

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Abstract

In developing path tracking controller for autonomous vehicles, a properly tuned controller will work well for a certain range of driving conditions but may need to be re-tuned for others. This study presents the development of an adaptive controller with Fuzzy Supervisory system for trajectory tracking control of an autonomous armoured vehicle. A knowledge database is built using Particle Swarm Optimisation which is the mainframe of the Fuzzy supervisory system in adapting to various trajectories and speed. The proposed controller is simulated on a nonlinear vehicle model, and experimental results for the controller are presented to evaluate the proposed controller.

Keywords: Armoured Vehicle, Autonomous Trajectory Tracking, Path Tracking, Stanley Controller, Particle Swarm Optimisation, Fuzzy Supervisory

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