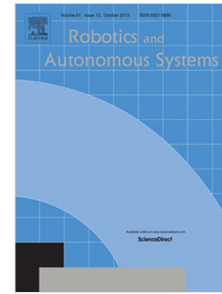


Accepted Manuscript

Adaptive modified Stanley controller with fuzzy supervisory system for trajectory tracking of an autonomous armoured vehicle

Noor Hafizah Amer, Khisbullah Hudha, Hairi Zamzuri, Vimal Rau Aparow, Amar Faiz Zainal Abidin, Zulkifli Abd Kadir, Muhamad Murrad



PII: S0921-8890(18)30090-3
DOI: <https://doi.org/10.1016/j.robot.2018.03.006>
Reference: ROBOT 3004

To appear in: *Robotics and Autonomous Systems*

Received date : 5 February 2018
Revised date : 28 February 2018
Accepted date : 23 March 2018

Please cite this article as: N.H. Amer, K. Hudha, H. Zamzuri, V.R. Aparow, A.F.Z. Abidin, Z.A. Kadir, M. Murrad, Adaptive modified Stanley controller with fuzzy supervisory system for trajectory tracking of an autonomous armoured vehicle, *Robotics and Autonomous Systems* (2018), <https://doi.org/10.1016/j.robot.2018.03.006>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

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

Noor Hafizah Amer^{1,2}. Khisbullah Hudha¹. Hairi Zamzuri². Vimal Rau Aparow¹. Amar Faiz Zainal Abidin³. Zulkifli Abd Kadir¹. Muhamad Murrad¹

¹Faculty of Engineering, Universiti Pertahanan Nasional Malaysia, 57000, Kuala Lumpur, Malaysia

²Malaysia-Japan International Institute of Technology, University Technology Malaysia, 54000, Kuala Lumpur, Malaysia

³Faculty of Engineering Technology, Universiti Teknikal Malaysia Melaka, 76100 Durian Tunggal, Melaka, Malaysia

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

Corresponding Author:

Noor H. Amer, Faculty of Engineering, Universiti Pertahanan Nasional Malaysia, 57000, Kuala Lumpur, Malaysia
Email: noorhafizah@upnm.edu.my Tel: +60193421407 Fax: +60390513472

Download English Version:

<https://daneshyari.com/en/article/6867120>

Download Persian Version:

<https://daneshyari.com/article/6867120>

[Daneshyari.com](https://daneshyari.com)