Localization Improvement by Velocity Updating in Wheeled-Robots Outdoor Navigation

Farid García and Matías Alvarado

Centro de Investigación y de Estudios Avanzados - IPN, Departamento de Computación, Av. Instituto Politécnico Nacional 2508, San Pedro Zacatenco, CP 07360, México DF

Phone: (+52) 55 57 47 37 00 ext. 3758, 3756; Fax: (+52) 55 57 47 37 57

farid@computacion.cs.cinvestav.mx, matias@cs.cinvestav.mx

Abstract: This paper proposal is for improving the localization of autonomous wheeled-vehicle that navigates on outdoor terrains. For this goal an automated velocity updating method is essential. A multi-layer fuzzy neural network employs data about the roughness and the slopes of the terrain to compute the navigation velocity, which is combined with the gradient method for path planning. Regarding terrain features, the experimental tests show robot's performance so with velocity updating, the wheels of the robot slip very less, the wheeled-vehicles odometry errors are lower too hence precision of vehicle self-localization is improved. Advances are both with respect to traveled distance and with respect to the spent time for making the travel. This artificial vision implementation is simple and computationally low-cost.

Keywords: Autonomous robot localization, Velocity Updating, Odometry errors correction, Outdoor Navigation.