

Fast obstacle detection by variable step of 3D laser scanning for robot navigation on unknown planet

X. M. Garcia

Mexicali, Baja California, Mexico

In the exploration of another planet by mobile robot the slow 3D scanning caused by small step can be a problem. It can be increased by combined scanning step for faster search of n obstacles in unknown surrounding. This is of keynote importance in automatic robot navigation, especially on the surface of another planet. To maintain a reasonable speed robot must to detect dangerous obstacles as soon as possible, and then calculate a safe trajectory in real time. So, the scanning with variable speed and precise digital mapping only for selected spatial sectors is under consideration here. Wide range of simulations in MATLAB 7.12 of several scenes with variable n obstacles, scanning it with angle value since 0.6° up to 15° was provided aiming to detect such angular values still permitting to get the most information about obstacles without undesired time loss. Three of such angles were obtained in simulation and then rectified by Levenberg-Marquardt Algorithm application and were applied to micro electro transmission design for practical realization of variable combined step scanning on our previously known laser scanner.

Biography

Xochitl Maria Garcia Cruz was born in October 19, 1978. She received the B.S. and M.S. degrees in Mexicali Institute Technologic, Mexico in 2001, 2009 respectively. Since 1997 she has been working at Metal-Mechanical Industry. In August 2008 was invited by Polytechnic University of Baja California, Mexico and Mexicali Institute Technologic, México, for professor researcher position. She has been writer 3 paper, one accepted and the rest are under revision form ELSEVIER, till the present time she was represented by her research works in several International Congresses of IEEE, ICCES, in USA and México she registered and will submit in ESCALA and MECH-AEREO. Now she works toward her Ph.D. thesis. Her research interests are in the areas of mechanical, aerospace, robotic, electronics.

xomagac@hotmail.com