

Efficient Roughness Recognition for Velocity Updating by Wheeled-Robots Navigation

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Abstract. In this paper is shown that the Appearance-Based modeling is the best pattern recognition method for supporting the velocity updating of wheeled-robots navigation. Although Appearance-Based recognition algorithms have lower accuracy than the ones for detailed pattern recognition, they successfully classify terrain textures by regarding the average of the appearance. Actually, the detailed recognition algorithms success in recognizing patterns depicted with lines, dots or borders, but they fail for recognizing patterns where the average appearance is required. As human driving experience shows, the assessment of the average appearance is needed for velocity updating during navigation on outdoor terrains. Human drivers make the velocity adjusting based on an estimation of the terrain average appearance. Hence, as the experimental result illustrate, the algorithms for average appearance recognition are the best option for training wheeled-robot for velocity updating while navigating over outdoor terrains.

Keywords: Roughness Recognition, Velocity Updating, Wheeled-Robots Navigation.