Surface Recognition using Roughness Information

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Abstract

This paper addresses the recognition of roughness coefficients on surfaces. The surface is modelled using the Appearance-Based-Model, whereas the classification and recognition of roughness are completed by means of a neural network. The roughness differences are easily identified on the straight line neighbourhood between couple of parts of the surface. So, the commonly crooked neighbourhoods, with different roughness among the different parts of a surface, are identified by approximating the surface through squares of different sizes. Analysis of the obtained results draws round that the roughness coefficient can be applied for controlling robot speed, such that the robot can move without slides or falls in the presence of holes or prominence of small dimensions.

Keywords: Surface Recognition; Terrain Exploration; Appearance-Based Model; Roughness Coefficient.