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传感网络及应用专刊

一种用于自律搬运车导航的混合式视觉方法

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摘要
For the autonomous guided vehicle (AGV) used mainly in unfixed work fields, a machine vision method was proposed for the navigation system, in which a series of navigation-signs are placed along the travel route. The navigation system detects and recognizes these signs, and accordingly informs the travel control system. In order for the navigation to have balanced ability of 1) covering a large area and 2) recognizing details of the sign, the proposed vision method was designed to be a hybrid one, using both the stereo vision and the traditional 2D template matching. The former implemented a coarse recognition function for above 1), and the later implemented a fine recognition function for above 2). The results from the coarse recognition were used in the fine recognition for the gaze control to input suitable 2D image of the signs. Experiments on a prototype system show the feasibility of the proposed hybrid method in achieving the objective specifications for a typicalb AGV.

关键词 AGV navigation machine vision disparity image stereo vision template matching

分类号

A Hybrid Vision Method for Autonomous Guided Vehicle Navigation

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Abstract
For the autonomous guided vehicle (AGV) used mainly in unfixed work fields, a machine vision method was proposed for the navigation system, in which a series of navigation-signs are placed along the travel route. The navigation system detects and recognizes these signs, and accordingly informs the travel control system. In order for the navigation to have balanced ability of 1) covering a large area and 2) recognizing details of the sign, the proposed vision method was designed to be a hybrid one, using both the stereo vision and the traditional 2D template matching. The former implemented a coarse recognition function for above 1), and the later implemented a fine recognition function for above 2). The results from the coarse recognition were used in the fine recognition for the gaze control to input suitable 2D image of the signs. Experiments on a prototype system show the feasibility of the proposed hybrid method in achieving the objective specifications for a typicalb AGV.

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