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基于立体视觉的越野环境感知技术

王荣本,李琳辉,郭烈,金立生,张明恒

吉林大学 交通学院， 长春 130022

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摘要

针对越野环境光照多变、场景复杂等特点，对基于双目立体视觉的越野环境感知技术进行了研究，
提出了一种适用于越野环境的视觉感知方案。采用高斯滤波和有限对比适应性直方均衡化（CLAHE）
对图像进行预处理，对亚像素级Harris角点检测、基于RANSAC方法的基础矩阵估计、
对极几何约束匹配及连续性约束等内容做了重点研究，
最后通过三维可视化技术验证了本方案的有效性及可行性。

关键词 交通运输系统工程 越野环境感知 立体视觉 CLAHE预处理 特征匹配

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Stereo vision based cross country environmental perception technique

Wang Rong-ben,Li Lin-hui,Guo Lie,Jin Li-sheng,Zhang Ming-heng

College of Transportation, Jilin University, Changchun 130022, China

Abstract

In cosideration of cross contry environment that is often variable in illumination and complicated in ciecumstance, a cross country environmental perception technique on the basis of stereo vision system was presented. The ooriginal images were preprocessed by Gauss filter and CLAHE method and Harris corners were located with sub pixel accuracy. Fundamental matrix was calculated using RANSAC theory. And epipolar restrain and continuity restrain were deeply studued. Finally, 3 D visulization techniques confirmed the effectiveness and feasibility of the proposed method.

Key words engineering of communications and transportation system cross country environmental perception stereo vision CLAHE preprocess feature based match

DOI:

通讯作者 王荣本 wrb@jlu.edu.cn