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ADVANCEMENTS IN STEREO VISION FOR SPACE EXPLORATION: TECHNIQUES

Abstract

In the quest for efficient space exploration, stereo vision emerges as a pivotal technology providing 3D information from digital images. This abstract discusses the utilization of stereo vision, particularly in the context of Mars exploration, emphasizing its role in spacecraft autonomy and obstacle avoidance. To enhance the current stereo vision techniques, suggestions include the adoption of advanced feature matching algorithms, incorporation of deep learning for disparity estimation, optimization for real-time processing, adaptive disparity range adjustment, advanced subpixel disparity refinement, deep stereo fusion, automatic calibration and rectification, adaptive block matching, handling challenging environments, integration with sensor fusion techniques, enhancing computational efficiency, and continuous model training. The abstract concludes by highlighting the potential of these advancements in shaping the future of computer vision in space exploration.