THE IMPACT OF SOLAR ANGLE AND CLOUD SHADOWS ON 3D RECONSTRUCTION OF ROLLING STOCK CARGO

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ABSTRACT

Meeting the relentless demand for more efficient air cargo transportation is paramount. This paper explores an innovative approach, harnessing cutting-edge stereoscopic vision technology to create 3D point clouds of rolling stock cargo, adaptable to varying solar angles and cloud shadow conditions. A virtual cargo image is generated by systematically organizing depth and location points. Accuracy is rigorously tested across six camera positions offering detailed, real-time insights for optimized cargo loading in unpredictable outdoor conditions. The findings reveal the impact of solar positioning, cloud coverage, and camera placement, promising to push the boundaries of possibilities for cargo logistics in challenging environments.

Keywords: air cargo logistics, 3D reconstruction, stereoscopic vision, solar angle, cloud shadows.