REVIEWER'S REPORT

Manuscript No.:   50650   Date: 14-03-2025

Title:

Neural Radiance Fields in Space Applications : A Comprehensive Review

Recommendation:

Accept ... **Yes**

Accept after revision ... ...

Do not accept (*Reasons below*) ...

Rating	Excel.	Good	Fair	Poor
Originality			**YES**	
Techn. Quality			**YES**	
Clarity		**YES**		
Significance		**YES**		

Reviewer Name: Gulnawaz Gani

<u>Reviewer's Comment for Publication</u>

The paper contributes a comprehensive review of Neural Radiance Fields (NeRF) in space applications, highlighting their potential, challenges, and future research directions.

Detailed Reviewer's Report

- The paper provides a thorough review of Neural Radiance Fields (NeRF) and their applications in space technology, highlighting their potential for satellite imaging, planetary exploration, and autonomous navigation. It effectively covers foundational principles, computational challenges, and future directions, making it a valuable resource for researchers.

- However, the paper lacks empirical evaluations and comparative results demonstrating NeRF's actual performance against traditional methods in space applications. While theoretical insights are well-explored, real-world case studies with experimental results would have strengthened its claims.

- The discussion on computational constraints is significant, yet potential solutions for resource-limited space environments need further elaboration. Integration with existing satellite imaging techniques and data fusion methods is briefly mentioned but requires more in-depth analysis.

- Overall, the paper is well-structured, but some sections, such as future research directions, could be expanded with concrete proposals. Although, this review is a foundational piece but it would benefit from empirical validation and a more critical analysis of NeRF's feasibility in operational space missions.