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AI IN THE COSMOS: TOWARD AN ADAPTIVE LEGAL FRAMEWORK FOR SPACE GOVERNANCE

Abstract

This paper explores the integration of Artificial Intelligence (AI) in space exploration and its consequential legal challenges, highlighting the necessity for an adaptive governance framework. The increasing deployment of AI technologies in space operations introduces complex legal issues, especially concerning responsibility and liability, and the applicability of existing rules of international law. Through a comprehensive literature review and case investigation, this study underscores the urgency for updated legal standards that may reflect AI's autonomy, capabilities, and potential risks in space activities, advocating for international cooperation in developing standards that effectively address these challenges. The complexity of attributing liability and the importance of ethical governance in AI-driven space missions are also emphasized. This analysis contributes to the ongoing dialogue on the need for a dynamic legal framework that can keep pace with the rapid technological advancements in space exploration. This paper aims to facilitate a harmonious integration of AI technologies within the legal governance framework of space activities, thus by highlighting the critical role of legal evolution, the paper suggests a balanced approach that fosters innovation while ensuring the sustainable and responsible use of outer space, underscoring the necessity of aligning terrestrial legal standards with the unique demands of space missions.