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"SYNERGY BEYOND EARTH: UNITING HUMAN INGENUITY AND AI FOR THE FUTURE OF SPACE EXPLORATION"

Abstract

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Synergy Beyond Earth: Uniting Human Ingenuity and AI for the Future of Space Exploration

Abstract

Future space missions present significant challenges for both humans and machines, requiring a high level of integration and collaboration. This paper explores the future of human-machine cooperation, focusing on the integration of Artificial Intelligence (AI) with human capabilities in joint space exploration missions. It examines how AI-assisted environments can be developed to support decision-making processes during space missions, particularly under the unpredictable and extreme conditions of space environments. The paper proposes a framework for incorporating AI systems in mission management, enhancing operational efficiency, and minimizing human error. Furthermore, it discusses AI applications in health monitoring, autonomous spacecraft maintenance, and adaptability to evolving space conditions. The ethical and legal challenges associated with increasing AI integration in space missions are also considered. The findings of this study will guide the design of future systems that strike an effective balance between human intelligence and AI, paving the way for more successful space exploration endeavors.