IAF HUMAN SPACEFLIGHT SYMPOSIUM (B3)
Interactive Presentations - IAF HUMAN SPACEFLIGHT SYMPOSIUM (IP)

Author: Ms. Samiksha Raviraja
Airbus Defence and Space, United Kingdom

AI AS AN ASTRONAUT? EVALUATING AI-DRIVEN AUTONOMOUS CREWS FOR DEEP-SPACE MISSIONS

Abstract

While the role and applications of AI are being explored in many industries, with quick advancements from AI models, this paper aims to explore the applications and the extent of those applications in space missions. AI-driven robotic astronauts and autonomous systems could reduce mission risks, optimize resource management, and support human crews in deep-space environments - this is all known information. The question this paper will explore is whether or not AI could fully replace manned missions? Should they? How does that impact future missions? What are the ethical and operational implications?

The discussion also incorporates hybrid mission models where AI and human astronauts collaborate, leveraging AI's efficiency while retaining human reasoning, adaptability and creativity.

This paper studies the feasibility of AI-run missions. The paper will study the latest various advancements in robotics, machine learning, and human-AI collaboration, assessing how AI could manage spacecraft navigation, conduct scientific experiments, and if in an assisting role - how it could provide psychological support for manned missions. Further, the paper will examine challenges such as decision-making in unforeseen crises, ethical considerations in AI autonomy, and human trust in AI-run mission control. And if something were to go wrong, i.e a human's death caused by an AI's decision making, how is that different to something similar happening on Earth and who should be liable.

By outlining potential scenarios, this research aims to provide a roadmap for the future of AI in space exploration, defining where the lines should be drawn due to safety reasons.