

IAF SPACE SYSTEMS SYMPOSIUM (D1)
Interactive Presentations - IAF SPACE SYSTEMS SYMPOSIUM (IP)Author: Dr. SANDhYA RAO
India, sandya.rao@notionrobotics.comDESIGN AND DEVELOPMENT OF AN ADVANCED AI SPACECRAFT SYSTEMS FOR HUMAN
EXPLORATION TO MARS AND TRAVEL TO COLONIES INTEGRATING WITH VIRTUAL AI
AND AR SYSTEM TO EDUCATE THE NEXT GENERATION**Abstract**

Space continues to attract broad public interest, human exploring the universe with AI is something that is exciting and positive and is based on an optimistic view of the future. We, the Notion Robotics Lab are designed of an advanced Spacecraft for travelling to Mars and Space Colonies. The advanced AI Spacecraft has main systems, subsystems, and auxiliary systems for the Mars travel. The main systems are the Power and its Distribution Systems, Environmental Control and Life Support System (ECLSS), Anti-Radiation Shield Systems. Each main system has subsystems to take care of long duration manned missions, good shielding and auxiliary systems to take care the complete mission requirements like characteristics of liquid hydrogen fuel and water, etc. The advanced spacecraft is equipped with the habitat module, crew transfer module, service module and propulsion module for accommodations and provisions for crew members of average aged couple and scientific payloads for the spacecraft. The anti-radiation shield is established with torus-solenoid rings method which is lighter than other methods and the effect of this quadrupole magnetic field on energetic particles is stable in order to shield spacecraft during Mars mission. This advanced AI Spacecraft could operate and be controlled with minimal human help. Notion Robotics Lab is also designing and developing Virtual AI and AR Lab Systems in globe to make distant missions more practical to everyone especially for researchers and students. With our AI and AR Lab system exploring Mars will be done virtually, by processing information from other planet while our researchers and students stay at Lab.

While Spacecraft launching and after landing on the red planet, the AI System of Spacecraft will continuously search and send information to lab. We are also designing the AI Robotic System for Landers to interconnect with lab and that enables to view information in many different ways so scientist can better see and understand the problems and to solve it for future exploration. We have visions of spreading our exploration and influence outward into the universe and onward into an unlimited future. Keywords: - Artificial Intelligence, Spacecraft, Virtual Lab, Environmental Control and Life Support System (ECLSS), Anti-Radiation Shield Systems, Crew Transfer Module, Service Module.