New Life Spheres Opened up by AI Robots

Project manager

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Japan Aerospace Exploration Agency

R&D institutions

Japan Aerospace Exploration Agency, Tokyo University of Science, Doshisha University, National Institute of Advanced Industrial Science and Technology

Summary of the project

The goal of manned space exploration is to challenge the limits of extreme environments such as the Moon and Mars, enabling not only humanity but all forms of life to establish independent habitats beyond Earth's dependence. This project aims to develop and utilize AI robot technology to build a base system with smart technology and behavior modification techniques, advancing research and development towards the realization of a long-term viable habitat for humanity by 2050. In addition, developed technologies can be applicable to the earth such as natural disasters and etc.

Milestone by year 2030

Develop a smart residential system equipped with AI robot technology that can sustain human life. Install and utilize this system in various Earth environments such as disaster-stricken areas and outdoor settings, contributing to the resolution of societal issues. Additionally, achieve a high level of completion for a system that can be integrated into international manned exploration plans, including lunar base activities.

Milestone by year 2025

Develop an initial version of a smart residential system equipped with AI robot technology that can sustain human life. Through experiments in demonstration fields, demonstrate the applicability of the system to future lunar base activities.

R&D theme structure of the project

Research and Development Project 1: Realization of Autonomous Inflatable Structures through Al Robotics

Here begins our new MIRA

Research Topic: Realization of Autonomous Inflatable Structures through Al Robotics Researcher: Shinichi Kimura (Tokyo University of Science)

Research Topic: Achievement of Gradually Expandable Connection System through Interconnection of Multiple Modules Researcher: Munetaka Ueno (Japan Aerospace Exploration Agency)

Research Topic: Robotization of Inflatable Structures and Development of Simulation Framework Researcher: Natsuki Yamanobe (National Institute of Advanced Industrial Science and Technology)

Research and Development Project 2: Construction of the Entire Residential Module System

Research Topic: Construction of Data Collection System and CPS Management System Researcher: Munetaka Ueno (Japan Aerospace Exploration Agency)

Research Topic: Construction of Autonomous Distributed Robot System for Autonomous Information Gathering, Residential Module Development Support, and Self-Repair using a Swarm of Small Robots

Researcher: Kimitaka Watanabe (Doshisha University)

Research and Development Project 3: Development of Environmental Sensing Technology in Residential Modules

