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ADVANCED MONITORING SYSTEM FOR MARS COLONIZATION

Abstract

Extraterrestrial colonies stand in need of an accurate, incisive and accommodative monitoring system to not only help supervise the construction phase but later facilitate sustainability and maintenance of the artificial ecosystem for human survival. The paper proposes an automated movement-based analysis monitoring system that can administer utilization and/or management of machines, services, atmosphere, and resources in Mars Colonies. The team has researched and designed a functional, expandable monitoring system with its testing currently underway for a full-scale prototype. The system supports one or more cameras and combines images from multiple cameras to capture each side and angle of the region with relative precision. Defined regions and parameters to be monitored have set limits, called thresholds, relative to the ideal or close to the ideal parameter being monitored. Additionally, the system allows automatic thresholding to pinpoint the exact level where faults occur to provide the ability to directly jump to failures and assess them effectively. To offer a centralized system, it records and stores all the data collected via cameras, sensors and satellites at the Supervisory Control Centre the authorized personnel can access which at any point of time. The posited idea will ensure streamlined construction and operation of sites on Mars, support livable conditions in the artificial habitats, and monitor production and management of resources and services to sustain humans.