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DEVELOPING GENERAL AI, BLOCKCHAIN, & AR/MR FOR EMERGENCY MEDICAL TRIAGE,
DISASTER RELIEF AND REMOTE MEDICAL RESCUE FOR ANALOG ASTRONAUTS LIVING IN
I.C.E

Abstract

Development and convergence of innovative, exponential technologies, such as, General Artificial Intelligence (GAI), Blockchain Technology (Ethereum platform), Augmented Reality (AR) and Mixed Reality (MR), specifically designed for space exploration and interplanetary missions can provide innovative solutions to address a myriad of challenges in the fields of emergency medicine, disaster relief, medical triage and remote medical rescues in austere, extreme areas on Earth for analog astronauts living in Isolated and Confined Environments (I.C.E). These technologies can be novel approaches for future long duration spaceflight and human-robotic planetary surface missions to Mars.

General AI is defined as an advance concept of AI where “decision-making” is based more on human intellectual abilities and not solely on logical empirical data, ie, machine learning in GAI is considered to be equally as clever as a person. Blockchain technology offers a new paradigm for ‘decentralization” of systems. For instance, challenges in emergency medical triage and remote medical rescue consists of risking additional human lives to save injured personnel, delivering immediate and effective medical intervention for acute trauma, and/or transporting injured crew back to basecamp for proper medical attention and recovery. The capabilities of each technology can be divided into possible solutions they can provide. GAI provides the ability for immediate diagnosis of trauma, assessment of severity, and prompt decision for emergency medical triage. Blockchain can provide security and guarantee the completion of remote medical rescue and emergency triage via smart contracts with an AI agent. AR/MR provides the ability for remote medical rescue team, remote mission support team, and flight surgeon to oversee Medical Extra-Vehicular Activities (MEVA) in real-time.

Pioneering innovative approaches incorporating these technologies will enable analog astronauts to reduce risks and minimize loss of human life in dangerous extreme environments on Earth, in Space and future Mars settlements. Mars Academy USA (MAU) trans-disciplinary team have developed the AvatarMEDIC™ Project to leverage these technologies into a “holistic” system as a novel approach to address medical emergency scenarios.

This abstract will highlight previous, current and future studies to address challenges in providing emergency medical triage and conducting remote medical rescue the AvatarMEDIC™ system in austere environments during mid-fidelity and high-fidelity analog astronaut simulation missions to Nepal and Everest Basecamp. Our focus will be on proposing a potential solution for overcoming challenges and reducing risks in medical emergencies by combining and leveraging exponential technology to impact and save lives in terrestrial and extraterrestrial environments with the AvatarMEDIC™ system.