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Contribution of Moon Village to Solving Global Societal Issues (2)

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EFFICIENT ADAPTIVE ARCHITECTURE FOR AUTOMATIC VOICE AND IMAGE TRANSLATION FOR SPACE SYSTEMS (AEMTAVI)

Abstract

The main space communication format used between astronauts, cosmonauts and taikonauts is usually voice communication. These space travelers communicate with each other and with mission control on Earth using radio or intercom systems that allow clear and reliable voice transmission. However, there is a desire to increase the human population in the celestial bodies of the Solar System, so it is necessary to guarantee alternatives and contingencies in communication.

The project named **AEMTAVI** (a Spanish acronym for Arquitectura Espacial Multilingüe de Traducción Automática de Video e Imagen), comes from the Latin and means "*I got it*", and consists of a spatial system for the integration of voice and sign language that seeks to be an international communication standard in deep space. In other words, we are talking about algorithms for language learning.

The general interest of this project is the participation in the assembly of communication elements, with the ease of operating with voice integration adapters and local translation adapters in the Moon Village, through the use of a multilingual neural machine translation system. These devices are space traffic agents that would provide two-way response communication in voice or non-auditory signal in front of audio and image receivers. The lunar camps will have a different community of missions from different

countries or private companies, but with the same objective. Considering a communication tool between future missions would be strictly always necessary, knowing that some countries have already decided to create their own camp.

Standardizing and normalizing lunar communication that allows secure interaction between missions is promoting the democratization of deep space communication. According to this, we would be aiming to meet the 2030 agenda with sustainable development goals 10 and 17 in the future Moon Village. It is based on including sign language, perfecting the interaction between languages in space missions, of different nationalities, proposing another step towards effective and inclusive communication, promoting a commitment to ISO 639 standardization where these signs are understood. It is needed for the basic settings of spatial user interfaces to ICT systems and devices.

Additionally, the voice communication system would allow people in the Moon Village to have the ability to exchange written messages and data using conversational artificial intelligence signal recognition agents. As a result, we seek to promote current and future designs of communication protocols and technologies to ensure effective communication between them, their camp, and mission control.