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THE IMPORTANCE OF EEG SIGNAL ANALYSIS FOR SPACE MISSIONS

Abstract

Space missions have increasingly ambitious objectives; these trips can take several days, months, or even years. If one considers the purpose of expanding the borders of our planet, many of these missions have to be manned, and astronauts must make long trips and have a proper physical and psychological preparation. Bearing in mind that in these long trips, one does not have all the comforts of the case, there is a restriction of energy and space, limitations of communication, and to a certain degree of isolation, the mental aspect is also essential. These harsh conditions of the trip can produce that the crew suffer from stress, depression and other psychosocial problems. In this sense, psychological study and mental preparation are essential before embarking on a mission of this type. This work proposes a study based on analysing the mission crew's electroencephalographic (EEG) signals in isolation situations, stress, and depression. This analysis could serve as a basis for better understanding and identifying the exact conditions that trigger the psychological risk that astronauts would face in long-term space missions and colonisation missions. This study will serve as a basis for future research and a monitoring system of psychological situations through EEG signals.