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IMPLEMENTING NEW FEATURES IN CIMON ROBOT FOR PROVIDING THERAPEUTIC ASSISTANCE TO ASTRONAUTS IN SITUATIONS OF EXTREME STRESS AND DEPRESSION.

Abstract

Long-term space flights can exhibit negative effects on an astronaut's mind. The isolation, confinement, and prolonged separation from their home planet and family have an adverse effect on space crews' psychological and social well-being. Moreover, additional factors such as anxiety, anger, depression and stress can add to strain and behavioural changes. With these degrading psychological conditions, the increase in human factors leading to unintentional failures takes place. This study focuses on resolving such psychological conditions by implementing new features in the existing CIMON robot for improved efficiency and assistance towards astronauts with true results related to mood, motivation, and self-monitoring strategies. The objective is to improve CIMON in providing better assistance not only as an interactive social and therapeutic assistance robot, but also to provide a personalised company and active assistance in day-to-day activities as a partner. Therefore, this paper includes detailed information about new features, such as the proposal of an intelligent system for monitoring the psychological state through different interactive dynamics, such as tests or personalised chats to identify things such as mood changes, heart rate data, stress level and adrenaline to recognize emotional changes and also various tools and techniques to improve emotional balance through breathing techniques, meditation, therapy and humour. Additionally, existing front cameras can be used as a mode of behavioural data collection. The findings and data collected through these new implementations will help study the fluctuations of the emotional stages that occur in a human mind in outer space and will also help prevent potential human error on future long-duration missions like the Moon or Mars.