

HUMAN SPACE ENDEAVOURS SYMPOSIUM (B3)
Enabling Technologies for Human Space Endeavours (2)

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ASSESSMENT OF THE POTENTIAL OF AUGMENTED REALITY IN MANNED SPACE
OPERATIONS

Abstract

Augmented Reality (AR) is the technique that attempts to improve human interaction with the surrounding environment by overlaying synchronized virtual imagery on the authentic imagery, in Real Time. A rather abundant amount of literature is available on the current developing technologies necessary to develop more usable AR systems, however, little efforts have been made in concentrating this promising technology on Space Exploration. As part of the International Space University Master of Space Studies program, an analysis of the needs in manned space exploration is performed, as well as an evaluation of the state of the art in Augmented Reality and Space Technologies in order to deliver an useful AR system to space. Even though this technology would deliver the most benefits to interplanetary exploration, the International Space Station is used as a case study in order to provide existing technical ground for the analysis. Three different potential types of AR utilization are identified on the ISS: Intravehicular Activities, Extravehicular Activities and Intravehicular Support to Extravehicular Activities. For each of these, the existing and necessary technological developments are identified, and a system outline is proposed. If the necessary technological developments are made, the use of AR in manned space programs could reduce time overhead in mission deployments, make tasks easier and faster for the astronauts, enhance crew training, provide a unique way of delivering information in high-delay communication situations and even complement the user experience in space tourism activities.