

Study of Augmented Reality Enabled Collaboration for In-Flight Maintenance Training

Activity:

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Abstract:

Nowadays work environments make use of even more advanced technologies and equipment to increase the productivity of workers. A unique case is the International Space Station – ISS, a modular structure that provides a platform to accommodate several scientists from different fields conducting scientific research in space. In-Flight Maintenance – IFM operations on-board of ISS imply astronauts fulfill specific quantifiable tasks regarding the checking, setting up, repairing the equipment and conducting mission specific procedures such as those involving the completion of scientific experiments.

The intrinsic nature of the equipment and procedures makes all manned spaceflight operations exhibit a high degree of complexity. The crew fundamentally lacks in-depth expertise on all on-board systems, critical situations typically being handled with support from local sources of information and from remote specialists located at the ground base. Augmented Reality – AR technology already proved to have a significant impact in various domains [2]. Due to the capability to enhance reality, to assist collaboration, to support spatial cues and to allow interaction between the virtual and augmented worlds, the AR support promises to successfully support novel types of interfaces for face-to-face and remote collaboration [1].

The objective of the research is to focus on novel ways to use AR technologies in the Human Space Flight Domain, with emphasis on space collaborative scenarios as well as on remote support in space operations. AR in conjunction with the use of optical see-through HMDs and additional collaboration technologies on virtual co-location [4] are intended to provide the base for improving collaboration [3], implementing a Just-In-Time and Just-In-Place assistance approach for training on in-flight maintenance activities.

Bibliography

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