

REAL-TIME AUGMENTED REALITY (AR) FOR SPACE STATION REMOTE MANIPULATORS

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Astronauts experience difficulties controlling camera-guided Space Station Robot arms. Mistakes can be dangerous. Our solution is to give appropriate 'X-Ray' vision for Space Station Robot arm operators. To accomplish this, we use 3D models to overlay dynamic computer graphics on the live camera view. Our aim is to instrument the Special Purpose Dexterous Manipulator cameras with Augmented Reality. The test-bed for our system is the Dexterous Manipulator Trainer (DMT). The figure below shows an operator of the DMT facility at JSC operating the arm with remote views. Three groups (Wayne State University, NASA/JSC Robotics and Systems Technology Branch, and NASA/JSC Space Human Factors Division) are working synergistically for this project. AR technology has been demonstrated on a medical application as well as on the DMT. Preliminary subject testing has been done to determine if adding an AR interface improves subject performance by the NASA Space Human Factors group and Wayne State University with promising results. Two more Human Factors subject tests are planned for next year. This work also has a direct technology transfer potential for medial robotics as well as image guided brain surgery.

