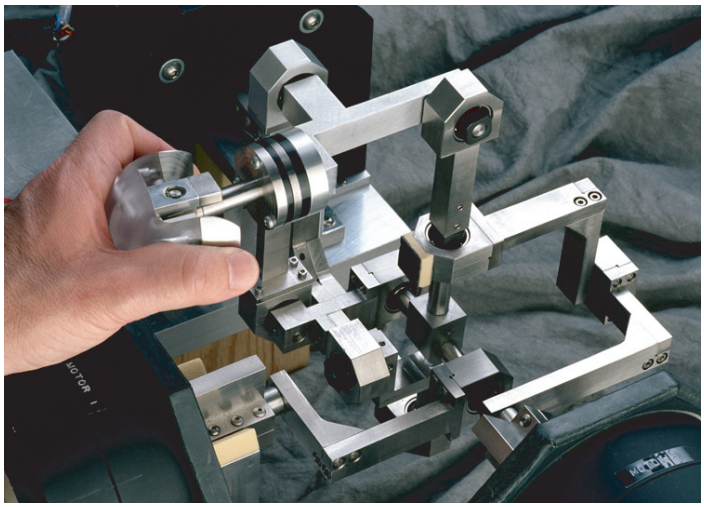
Human Factors

research and technology division

Performance in Haptic Virtual Environments with Visual Supplement

Objective

To determine human factors guidelines for effective haptic (force reflecting) manual interfaces for multisensory virtual simulator and teleoperation displays.



Approach

The two major program aspects include:

1) the design and implementation of a novel, very high performance three degree of freedom (dof) force reflecting manual interface for use with our laboratory's virtual visual display as a research testbed

2) examination of human perception and manual task performance respectively through psychophysical discrimination and manual target acquisition experiments with the combined haptic-visual virtual environment testbed.

Impact

High fidelity virtual environment and virtual object simulations using tuned predictive filters have allowed presentation of perceptually stable virtual objects enabling testing of new visual-manual phenomena and measurement of the simulation fidelity requirements for several levels of manipulative precision.

Patent awarded for the three degree of freedom parallel mechanical linkage.

POC: Bernard D. Adelstein, Ph.D.

URL: http://vision.arc.nasa.gov/IHH