



# Human Systems integration division



## Performance in Haptic Virtual Environments with Visual Supplement □

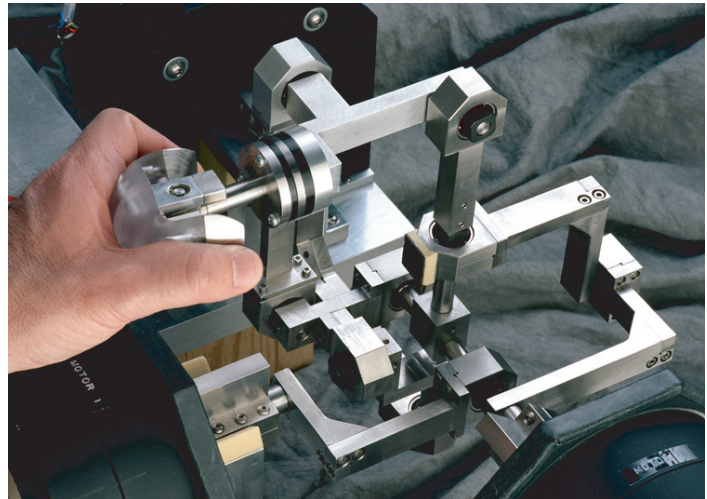
### Objective

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://humansystems.arc.nasa.gov/groups/ACD>

E-mail: [Bernard.D.Adelstein@nasa.gov](mailto:Bernard.D.Adelstein@nasa.gov)

