

Haptics

Organizers & Chairs: John Hollerbach, Vincent Hayward

Some current Issues in Haptics Research

John Hollerbach
University of Utah

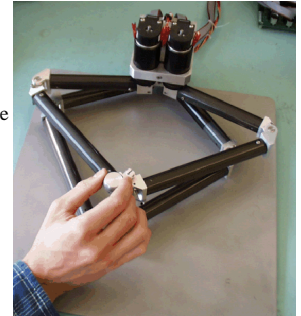
- Mechanical, computational, and application issues that challenge haptics
- Description of the current state of the art
- Explicit examples from virtual prototyping and Treadport locomotion interface projects
- A demonstrated utility of haptics is the most important next step



Isotropy and Actuator Optimization in Haptic Interface Design

S. E. Salcudean and L. Stocco
University of British Columbia

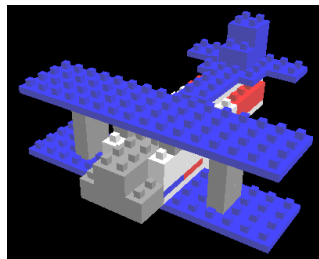
- High Performance Needed for a Realistic Haptic Interface
- Design Method for Workspace-Inclusive Isotropy
- Conventional & Maglev Robot Design Examples
- High Stiffness & Acceleration are Obtained



Stable Haptic Interaction Using the Excalibur Force Display

Richard Adams and Blake Hannaford
University of Washington

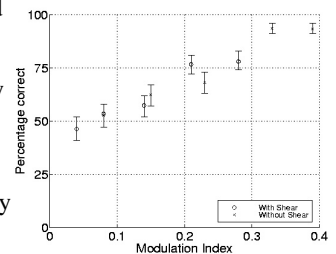
- Haptic system design often generates trade between stiffness and stability
- Analytic design method based on Llewelyn's stability criterion
- Stability guaranteed for passive virtual environments
- 51,000 N/M coupling stiffness without small or large oscillation in a virtual building blocks environment.



Human Tactile Spatial Sensitivity for Tactile Feedback

G. Moy, U. Singh, E. Tan and R. S. Fearing
University of California, Berkeley

- Test spatial, shear stress, and viscoelastic perception
- Shear stress in tactile display reduces spatial resolution
- Afterimage effects correlate with fingerpad viscoelasticity
- 10



Designing with haptic feedback

Karon MacLean
Interval Research Corp.

- We share insights in what and how haptic feedback is useful in UI design:
- observations on physical interaction and how and why we do it;
- analysis of situations where active touching helps; and
- a model for designing haptic feedback into specific applications.



Haptic Interface Control - Design Issues and Experiments with a Planar Device

M. R. Sirouspour, S. P. DiMaio, S. E. Salcudean, P. Abolmaesumi and C. Jones
The University of British Columbia

- The haptic rendering of a virtual environment has been addressed.
- A four-channel teleoperation architecture was proposed for this purpose.
- This method was implemented using a new parallel haptic mechanism and an explicitly modelled virtual environment.
- Good force and position tracking were achieved.

