A GLOVE GESTURE AND 3D POSITION TRACKING INTERFACE

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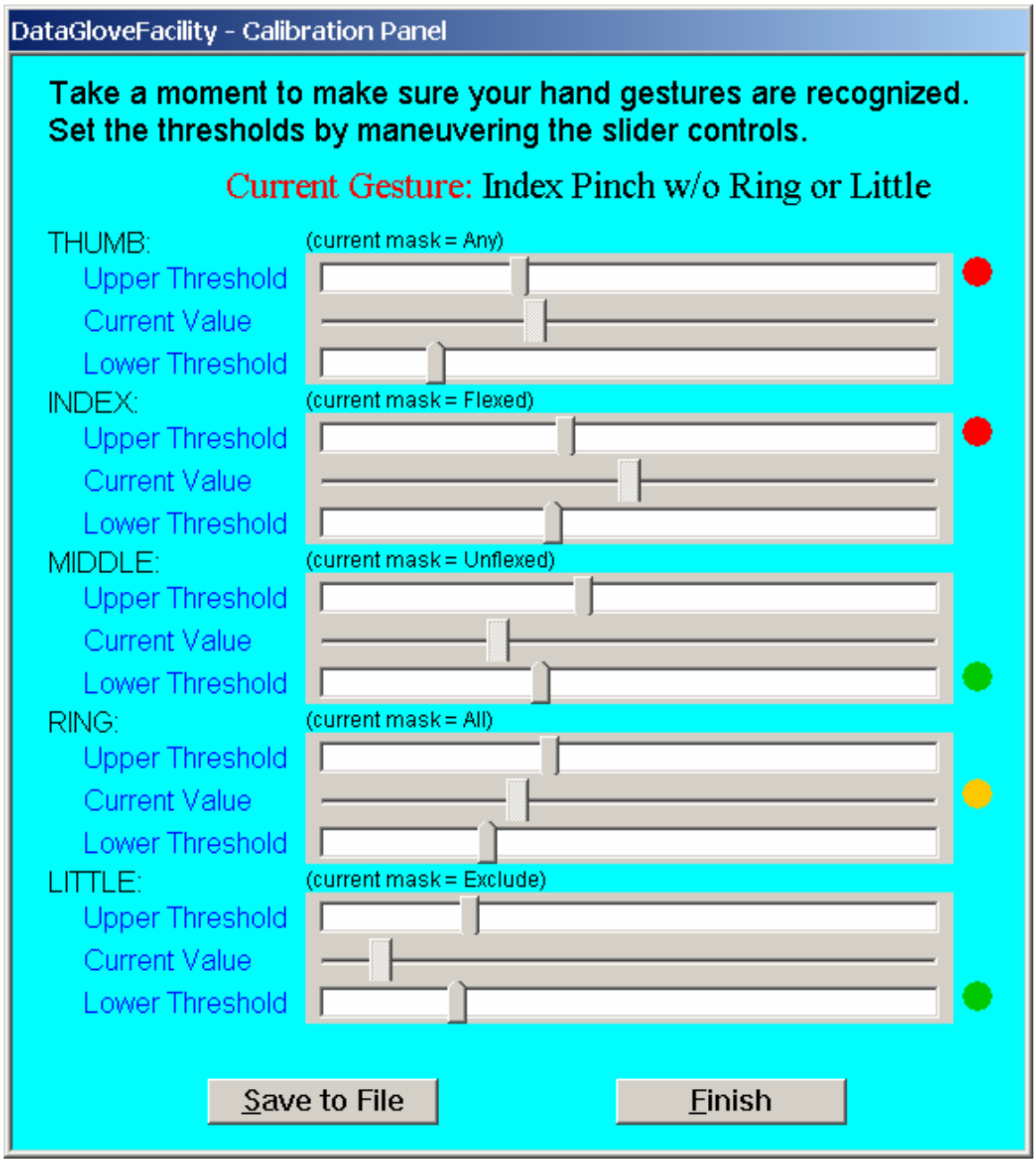
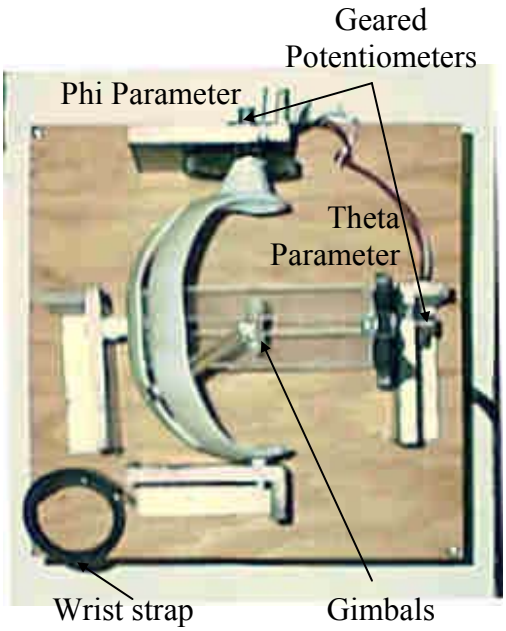
This project was to develop navigational and manipulation techniques for a virtual world using a data glove and a novel 3-dimensional position tracker. A facilitator library was written to register gesture events for the data glove. A position tracker based on spherical coordinates was prototyped. The prototype position tracker was analyzed and future extensions are proposed. A virtual environment was created using DirectX to test the glove gestures and position tracker. This environment implemented navigation and manipulation algorithms to assess gestures and position tracking.

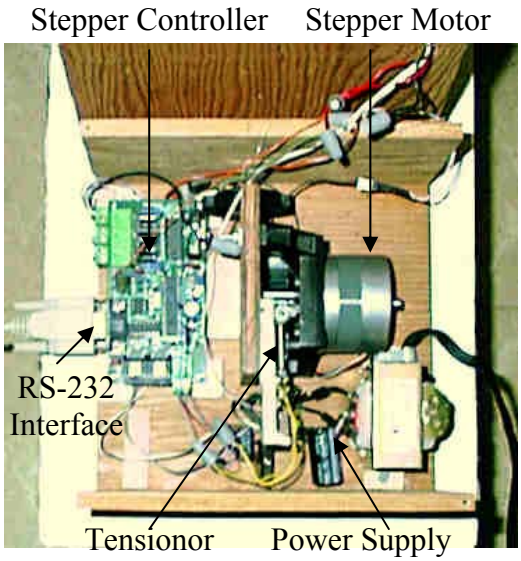

DataGloveFacility - Calibration Panel
Take a moment to make sure your hand gestures are recognized.
Set the thresholds by maneuvering the slider controls.
Current Gesture: Index Pinch w/o Ring or Little
THUMB:
(current mask = Any)
Upper Threshold
Current Value
Lower Threshold
INDEX:
(current mask = Flexed)
Upper Threshold
Current Value
Lower Threshold
MIDDLE:
(current mask = Unflexed)
Upper Threshold
Current Value
Lower Threshold
RING:
(current mask = All)
Upper Threshold
Current Value
Lower Threshold
LITTLE:
(current mask = Exclude)
Upper Threshold
Current Value
Lower Threshold
Save to File
Finish


Z
Y
o
X

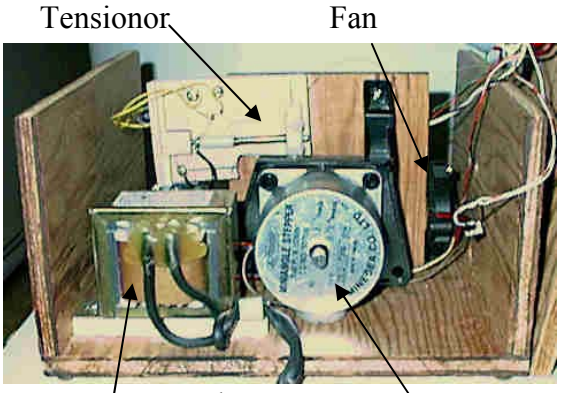
(a)


Geared
Potentiometers
Phi Parameter
Theta
Parameter
Wrist strap
Gimbals

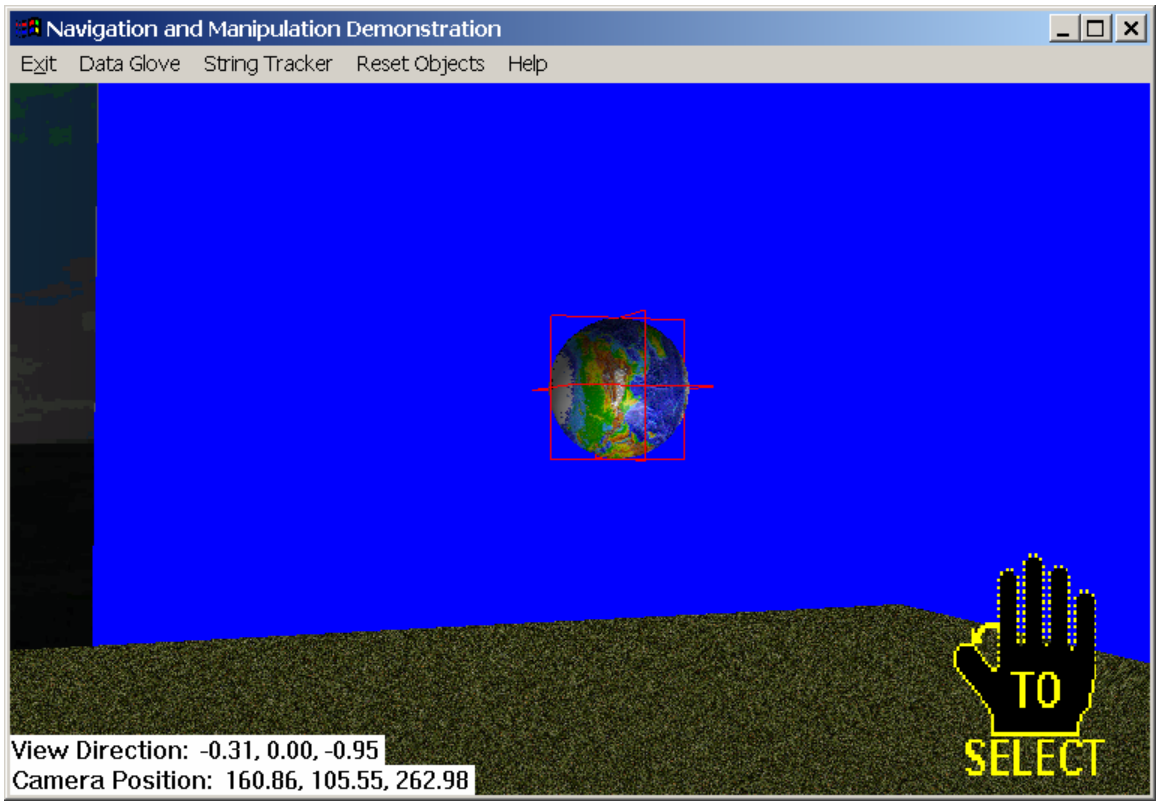
(b)

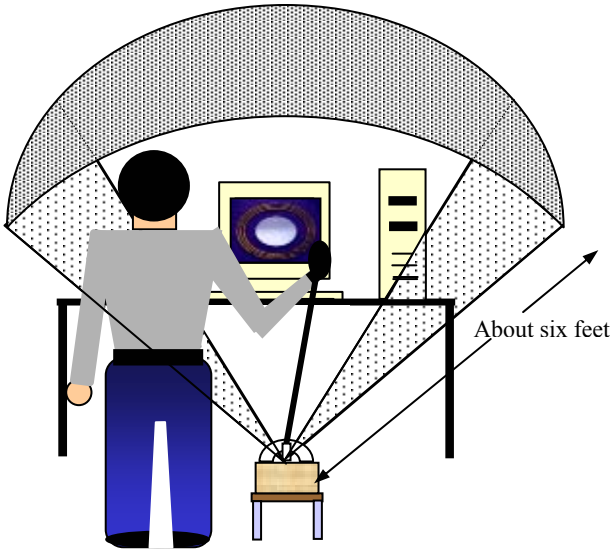

Stepper Controller
Stepper Motor
RS-232
Interface
Tensionor
Power Supply

(c)


Tensionor
Fan
Power Supply
Transformer
Stepper Motor

(d)


Navigation and Manipulation Demonstration
Exit
Data Glove
String Tracker
Reset Objects
Help
TO
SELECT
View Direction: -0.31, 0.00, -0.95
Camera Position: 160.86, 105.55, 262.98


About six feet