

# CMSI 370

## INTERACTION DESIGN

Fall 2010

### Assignment I I 30

Time to dip your fingers into some direct manipulation programming, using both traditional (mouse) and emerging (multitouch) input technologies. In case you're wanting more, an extra credit task is provided.

#### Not for Submission

If you haven't done so yet...

1. Read Chapter 5 from Shneiderman/Plaisant (Chapter 6 in older editions).
2. Read Chapters 3–4 from Norman.

#### For Submission

##### Mouse-Based Box Resizing

Extend the *boxes* sample code in *ixd-bazaar* so that it also supports direct-manipulation box resizing. You are responsible for the entire resizing interaction, from visual displays, to feedback, to the actual resizing behavior and functionality.

##### Multitouch Box Drawing

Extend the *boxes-touch* sample code in *ixd-bazaar* so that it also supports direct-manipulation, *multitouch* box drawing. That is, multiple fingers should be able to draw multiple boxes at the same time, the way the sample code allows the moving of multiple boxes at the same time.

To test your work effectively, you'll need to upload your files to a web server, then point your touch-capable device to that server. For this purpose, our lab manager has set up a *my.cs.lmu.edu* host, on which you each have a home directory and a *public\_html* site folder. Note that the accounts on this host are *not* the same as your Keck lab accounts — this is a one-off service that has been set up while the usual infrastructure is still being repaired.

Use any *sftp*-capable client to upload your files as needed, then access those files using your touch-capable device's web browser in order to test your work. Some guidance can be found in the "Keck Lab How-To" page, located at:

*http://www.cs.lmu.edu/lab*

The files themselves will have a root URL of:

*http://my.cs.lmu.edu/~username*

#### How to Turn it In

Upload your final versions to *my.cs.lmu.edu* before class on November 30 as *boxes-2.0.html* and *boxes-touch-2.0.html*, respectively.

#### Extra Credit

You will get an extra assignment credit if you also implement box resizing in *boxes-touch-2.0.html* via the "two-finger pinch" gesture. Read the *Handling Gesture Events* section of the *Safari Web Content Guide* to get an overview of this functionality, and refer to the *GestureEvent* section of the *Safari DOM Additions Reference* for specific API details.

#### Extra Extra Credit

You will get *even more* credit if you include *rotation* functionality in *boxes-touch-2.0.html* as well. The *GestureEvent* API should also be used for this, using the same documentation as above.