From don Wed Nov 1 11:10:46 1989
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From: don (Don Hopkins)
To: Brad.Myers@a.gp.cs.cmu.edu, ben@cs.UMD.EDU
Cc: don
Subject: video tape of pie menus

I will make a video tape of pie menus for you by November 1. I'm sorry I took so long to respond. The tape is now top priority. I just finished a paper for the Usenix graphics workshop in Monterey, on Nov 16-17, (The Shape of PSIBER Space: PostScript Interactive Bug Eradication Routines), about a direct manipulation visual PostScript debugging/programming/environment exploration tool for NeWS. I have to make a video tape of that for the workshop as well. It makes use of pie menus, tab windows, snap dragging, dragon dropping, and several other interesting interaction techniques. I will tape them all in the format described in the very informative package you sent to me in the mail.

Here's a list of some of my work that I can tape. There is a bit of overlap, since some of these things are built around or on top or along side of others. Which sound most appropriate for your interaction techniques video?

-Don

Mousee:
A virtual mouse in a window, that tracks the real mouse on the screen. It leaves the path wherever the mouse travels, and marks where buttons are pressed. The virtual mouse has buttons that highlight when the real buttons are down.
Very useful for illustrating the use of the mouse while demonstration interaction techniques. The latest version also draws the locations and outlines of menus (both pie and linear) when they're activated (even if the actual menu display is supressed).

Pie menus:
The usual stuff: a few items, a lot of items (bad), 8 items (good), mnemonic directions, nested menus, browsing a menu tree, mouse ahead, display supression (w/ pac-man feedback).

Pull out pie menus:
Direction specifies one of several pie menu selection slices. Distance is an argument to the selection.

Discrete pull out pie menus:
Distance specifies one of several sub-selections (or arguments) in each slice. They encompass 2-dimensional linear menus.

Continuous pull out pie menus:
Distance into the wedge specifies a number, that you see in the menu center, increasing as you move the cursor out.

Font menus:
Pie menu of font families, with submenus of font styles. The font style submenus include samples of the font in normal, bold, italic,

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XNEWS Photo

and bold italic (or whatever styles are available). The pull-out selections use the distance to select the point size, giving feedback in the menu center of the font (family, style, size) selected. When you pull out and in, the font sample in the menu center grows and shrinks. (This is /very/ nice using the Folio outline fonts in X11/NeWS, once you've loaded up the font cache.)

Color menus:
Pie menu of color properties you can change. Pull out to select brightness, then pop up hue/saturation color wheel submenu at that brightness. Direction is hue, distance is brightness. You see feedback in the menu center, a circle of the selected brightness, hue, and saturation.

Spiral pie menus:
A pie menu with many items can take up a *lot* of screen space because of the way it's layed out. The more items, the harder it is to select from any of them. 8 is an optimal number of pie menu items to display. Spiral menus can have any number of items, but will display at most 8, allowing you to scroll between the others by cranking the cursor around the menu center. Arrow symbols are drawn to indicate that there are more entries "around the bend". Non-euclidian parallel of scrolling linear menus.

Pie menu selection from the keyboard:
4 or 8-item pie menus can be used with an arrow or numeric keypad. A simple NeWS utility that maps the keypad to mouse movement and button events transparently allows the unmodified pie menu implementation to be used without the mouse.

Pie menu window manager:
A window manager that uses pie menus, designed to take advantage of muscle memory. A good demonstration of pie menu design principles, in a practical application. I have written a paper about it.

NeMACS:
The NeWS interface to UniPress (Gosling) Emacs. Multiple windows, with title tabs sticking off their edges. You can have a whole bunch of windows opened at once, overlapping but with all of their tabs showing. The lined-up tabs serve as a linear menu of opened windows, and as handles on the windows that you can use to bring them to the top, move them around, or pop up a window managment menu. Lots of pie menus of NeMACS functions (including font and color pies).

HyperTIES hypertext browser and authoring tool:
Runs under NeWS and NeMACS. Multi-window editing of text files of a hypertext database, alongside a formatted graphial view in a browser window.

PSIBER Space Deck:
The interactive visual programming environment alluded to above. Tab windows viewing mouse sensative PostScript data structures that you can open up, edit, copy, and paste. The PostScript process's stack is a spike that you can directly manipulate by dragging objects up and down and on and off. Snap dragging of objects spiked

into the stack. Lots of pie menus. The pseudo-scientific visualizer, a fish-eye lense for displaying arbitrarily complex data structures, that's too weird to describe, but uses lots of colors, does tricks with the overlay plane, and makes the power supply chirp and buzz. Including extra-cheezy pop-up pointing hand annotations.