

**Invention Title:**

Gestures for mosaic window management

**Invention Summary:**

This invention provides a set of gestures that allow you to subdivide a main window into an arbitrary set of sub-windows that completely cover the area of the main window. The process divides the main window into a set of rows or columns and continues by subdividing these rows/columns until the user achieves the window layout they desire.

**Invention Description:**

My work on an HTML5 Window Manager required me to design a mechanism allowing a user to divide a TV screen into a number of smaller screens. These screens allow the user to watch multiple programs simultaneously, watch a program while surfing the web, etc. The problem was to create an easy way for the user to change the layout of the screen with a set of windows that completely cover the whole screen.

My solution was to use a set of clicks to divide a window into either a set of rows or a set of columns. From there the same procedure is repeated within each created row/column to further subdivide these windows into smaller windows.

To create a row layout, you produce a series of clicks in a roughly vertical layout. For example, two clicks with one above the other will create two rows. It doesn't matter if the clicks are generated top-to-bottom or bottom-to-top. And it doesn't matter if the clicks are on the left or right side of the screen.

Column layouts are created in a similar fashion, with a set of roughly horizontal clicks creating a column layout. For example, two clicks with one to the side of the other will create two columns. As above, it doesn't matter if the clicks are performed left-to-right or right-to-left. And it doesn't matter if the clicks are on the upper or lower part of the screen.

The same set of gestures can be used within each of the newly created rows/columns to further subdivide these windows into smaller windows by creating nested rows or columns.

For the subdividing step, there is a shortcut that re-uses the click that created the window you're subdividing as the first click. Using this shortcut allows you to divide a new row/column with only one additional click. For example, if I created a two-column layout using two clicks across the upper part of the screen, I could divide one of these windows with one additional click in the lower part of the column.

This height of the created rows, or width of created columns, can be based on the separation of the clicks used to specify the rows/columns, or they can be determined another way. One way of picking height/width is to evenly divide the area between the created rows/columns. Other approaches could also be used.

I have a working prototype of this invention that will divide a screen into at most four separate windows.

**Invention Commercial Value/Customers:**

With 4K TVs, there is an opportunity for consumers to watch up to 4 HD programs at once, or to combine multiple entertainment options on one screen. One of the requirements for this is an easy interface for managing these windows. While there are a number of ways to accomplish this, it is likely that the industry will settle on just a few approaches.

The customers for this invention would be CE vendors that included it in their default interface, or content providers that wanted to provide web pages supporting this functionality.

**Invention Differences:**

Currently the tiling (or mosaic) window managers I found use one of the following approaches:

- Grid points where windows snap to when created or moved
- Docking windows to edges or corners
- Predefined tiling configurations
- Dynamic arrangement systems which automatically change the layout when the set of windows changes
- Window-drag systems that change the layout while you drag a window on the screen
- Customized layouts with hot-keys

See: <http://www.techsupportalert.com/content/best-free-window-manager-resizer-arranger.htm>