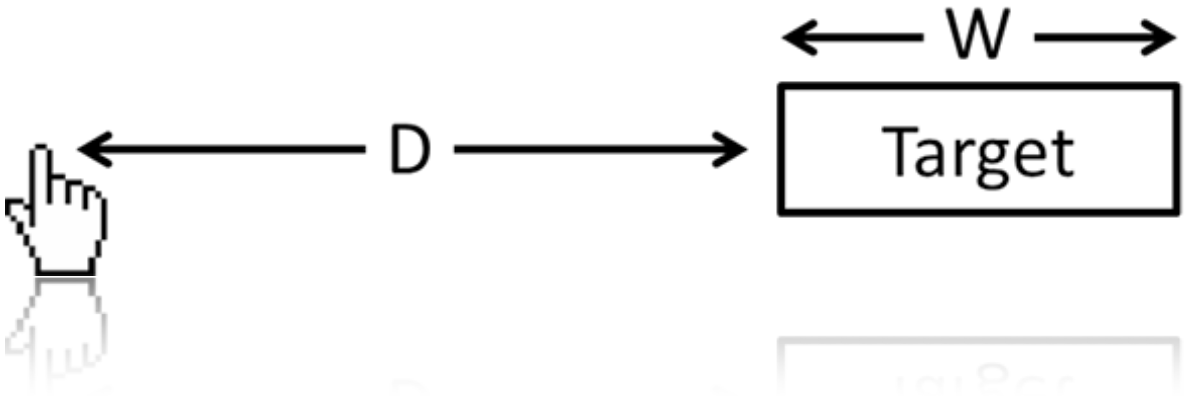
人机交互理论与技术

课程作业 - 4

Fitts' law quiz



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唐玉涵

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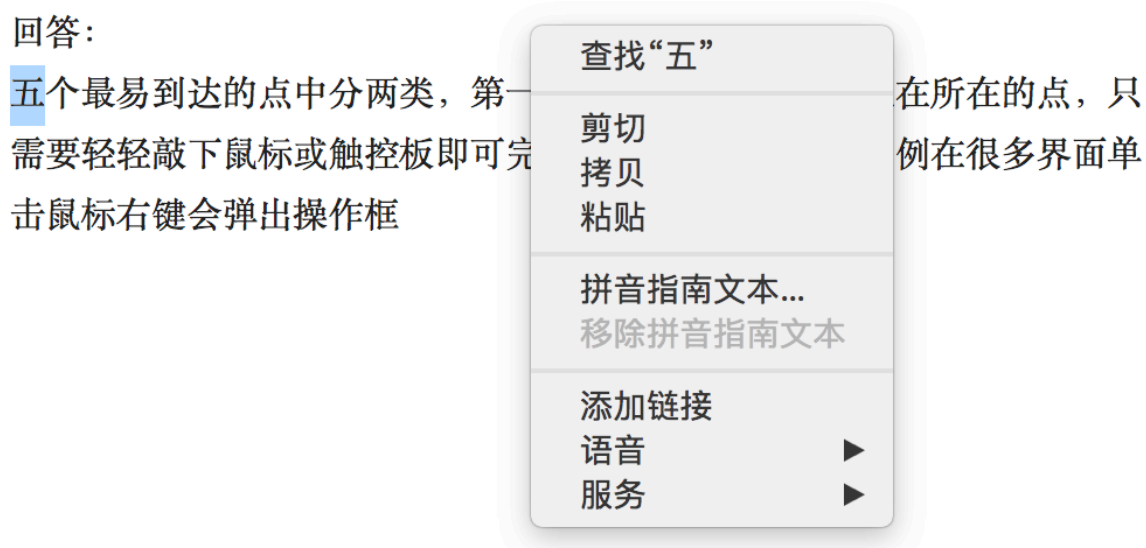
Question 3:
A right-handed user is known to be within 10 pixels of the exact center of a large, 1600 X 1200 screen. You will place a single-pixel target on the screen that the user must point to exactly. List the five pixel locations on the screen that the user can access fastest. For extra credit, list them in order from fastest to slowest access.

回答：

五个最易到达的点中分两类，第一容易达到的就是鼠标指针现在所在的点，只需要轻轻敲下鼠标或触控板即可完成点击，这个的应用实例在很多界面单击鼠标右键会弹出操作框，如下图：



其余四个容易到达的点为屏幕的四个角，虽然它们距离中心的距离较远，但由于要点击的对象较小，大小和距离有了弥补。而把鼠标用很快的速度移动，有很大可能会落在这四个角中的一个。应用这一原理，很多操作系统都把软件的功能按钮放在角上，如下图：

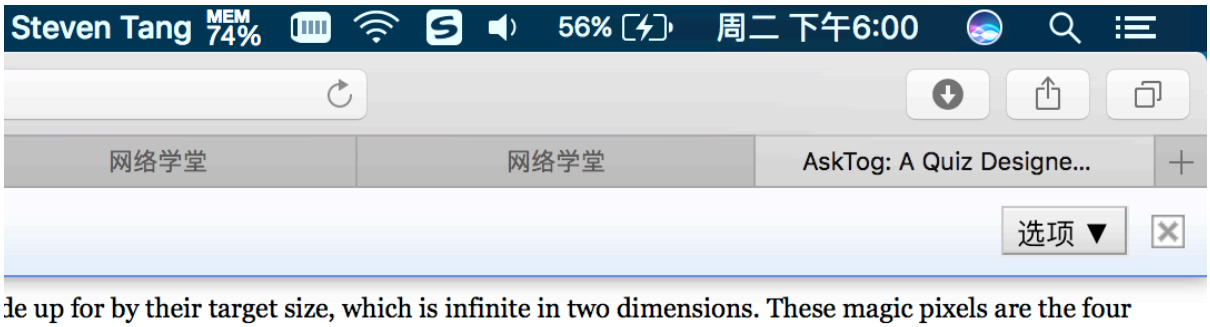
The other four pixels are located, on average, as far away from the mouse pointer as you can get. Their distance, howe corners of the screen. Throw the mouse in any direction you desire and the odds are overwhelming that if you threw i function for the mouse.

The key to the extra credit question is in the user's right-handedness. A right-handed user can access, in order of incr

A. The pixel immediately at the current cursor location: Click the mouse and you're done.

B. The bottom-right corner.
C. The top-left corner.
D. The top-right corner.
E. The bottom-left corner.

If you hold the mouse in your right hand and move the mouse, using just your wrist and hand, in the four different di reversed.



le up for by their target size, which is infinite in two dimensions. These magic pixels are the four , it will end up in one of those four corners. This presupposes a properly designed acceleration

starting with the point already mentioned:

考虑到右手习惯，这五个点的速度排序（从快到慢）为：鼠标指针所在点、右下角、左上角、右上角、左下角。若为左手则相反。

实际我自己在使用触摸板来感受四个角的时间长短时很难确认时间顺序，但感觉右下角在四个里不是最快的。我找的另一位同学参与实验，他的感受是四点顺序为：左上角、右上角、左下角、右下角。所以这一题的排序还有待大量实验来验证。

Question 8:
What can you do to linear popup menus to better balance access time for all items?

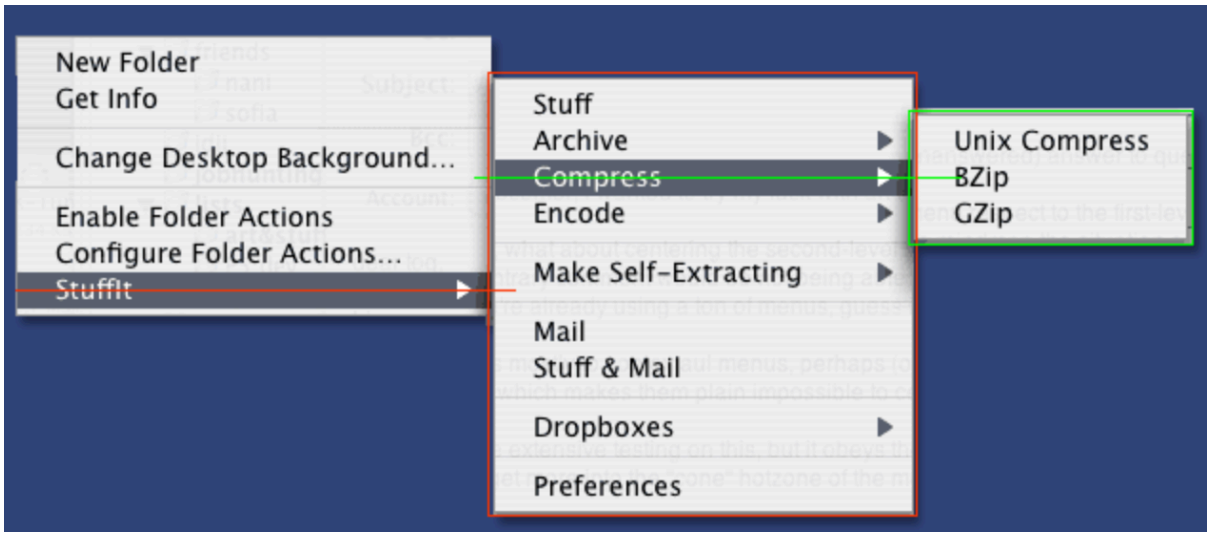
回答：

有以下三种方法：

1. 运用Fitts'定律，将较为远离鼠标指针位置的表项的大小调大，这样它们的到达时间会有所缩短；

2. 设立局部重力，一旦鼠标指针进入某表项附近，即会被吸引到该表项。问题在于这样的话很难从一侧穿越到另一侧。

3. 子菜单的展开以父亲表项为中心，如下图所示。这样的好处在于最远端表项的访问时间缩短，即使得所有表项的访问距离都不超过二分之一表项数。



然而，目前的操作系统中并没有做这样的优化，如下图。可能还有更多的考虑，在访问时间因素之外。