



Rodent of Choice: Selecting a Head Tracking Device

by Walter Pfrommer

Okay, you have established that you need point-and-click computer access. You have sensibly decided on a Mac with KeyStrokes on-screen keyboard. So, what next?

Exactly, you need something to move the cursor. Some heavily challenged people can operate a conventional mouse, joystick or trackball, but you, like me, can't – we need a head tracking device. Before you make a decision to purchase a particular head tracking device, listen in to learn my experience...



IR (infra-red) optical head tracking devices track a reflecting dot, the target, stuck on the user's glasses or forehead. Basically cameras, they are susceptible to bright lighting conditions that diminish the contrast between the target and its surroundings. High contrast targets and use of the IR spectrum reduce these problems, as well as sensor design and signal processing algorithms. Mouse clicks are performed with a switch or by dwell clicking, a software feature like that found in KeyStrokes whereby the user keeps the cursor steady in the position to be clicked. I have had the opportunity to test the three

most popular devices currently on the market and compare them to my legacy HeadMouse® for Portables.

The HeadMouse for Portables, developed by Origin Instruments, was quite expensive, costing \$1695, so when RJ Cooper brought the SmartNAV® (www.rjcooper.com) to the Mac, I immediately got interested, the device being significantly cheaper at \$299 for the EG Model.

The SmartNAV is a small, USB-powered device that sits on top of the computer screen like a tiny, friendly alien staring at you. Cool. The signal processing and mouse emulation software installed well and was very intuitive. Targets were slightly stiffer and thicker than the Origin targets, but attached to my glasses nicely. A little tweaking of the settings, and I was mousing away quite happily.

Then the sun appeared from behind the clouds, my room filled with light and the cursor went berserk. I switched back to the HeadMouse and continued to work without problems. I kept trying the SmartNAV for a couple of days, but the results were uniform: though the SmartNAV worked, the HeadMouse let me work in conditions where the SmartNAV would not. Another difference is that the HeadMouse does signal

processing and mouse emulation in its hardware, whereas with the SmartNAV, all that is burdened on the CPU, consuming about 20% of cycles on a 1GHz Apple PowerBook. Though cheaper, I wouldn't recommend the SmartNAV to anyone who could scrape together the money necessary to buy a HeadMouse.

Enter Origin Instruments' HeadMouse Extreme® (www.origininstruments.com), which replaces the old HeadMouse for Portables. At \$995, it costs 45% less than the previous model, and like the SmartNAV, it is a small, all-in-one device powered via USB, but unlike the SmartNAV, the signal processing and mouse emulation is performed in its hardware.

I instantly liked the HeadMouse Extreme. Whatever the HeadMouse for Portables does well, the HeadMouse Extreme does a little better. For instance, there is a position in my room where, due to a window in the back, I must be careful not to turn my head out of the sensor's field of view, otherwise the HeadMouse will lose sight of the target, lock onto a reflection in the window, and not reacquire the target unless it's shaken or the sensor is obscured. In the same



SmartNAV



HeadMouse Extreme



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position, the HeadMouse Extreme will reacquire the lost target smoothly.

Next up was the Madentec Tracker[®] Pro (www.madentec.com). Roughly the size and shape of a golf ball and costing \$995, the USB-powered Tracker Pro attached nicely to the dual lock tape on my PowerBook's lid. The mount was not entirely wobble free, but the cursor was very steady – indeed a little too steady for my taste. The price to pay for this steadiness is a small, hard-wired delay before head movement translates to



cursor movement. Personally, I prefer the HeadMouse Extreme's instant response.

I tried to verify Madentec's claims to superior outdoor performance and was not disappointed. Where my old HeadMouse for Portables only works if the sun is at right angles to my line of vision and doesn't shine directly on the sensor or target, the Tracker Pro worked regardless of whether the sun shone on the sensor, target or both.

I have not been able to directly compare Tracker Pro and HeadMouse Extreme as I had them at different times. Other individuals have had the opportunity, and the difference seems to be small, if any.

So what is the bottom line? If you are on a budget and able to produce an invariable, not too brightly lit environment, the SmartNAV is well worth a try. The Tracker Pro's cursor delay does not appeal to me, as I was constantly overshooting my target, though if you think you might profit by an extra steady cursor, give it a try. But if you are serious about head tracking, get a HeadMouse Extreme. □

A more detailed version of this article was published in the June/July, 2005 issue of Closing The Gap.

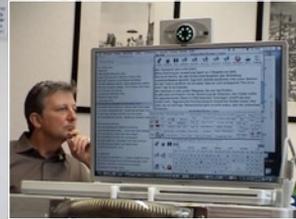
Bright Days Ahead: Pushing the Envelope in Target Size

Do you notice something about my battered Ray Ban sunglasses? Yes, they are cool, but apart from that? That's right, the reflecting target. It is about four times the size of a normal dot and has boosted my outdoor headmousing experience a lot. Using an IR head-tracking device in the open is tricky, and will be regardless of target size. Screen washout and general glare issues add to the problem. If you want to write a novel, go inside. But I rely on my PowerBook for speaking, so whether I'm able to say something or not decides whether I can be with others in the sun. I love the extra opportunities the monster size targets give me. Try them for yourself. You may also try clustering together 4-6 regular size targets. Although I haven't attempted this, I would love to hear from other HeadMouse users who have.





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