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PERSONAL TECH

The Boston Globe

Specs that complete the picture

By Mark Baard | September 11, 2006

Prototypes

People suffering from loss of peripheral vision may soon be able to replace the canes they use to sweep the sidewalk for obstacles with eyeglasses that show them what lies beyond the limits of their vision. The glasses may also lead to technologies that enable the legally blind to return to driving their cars.

The specs, invented by Eli Peli, a senior scientist at Schepens Eye Research Institute in Boston, have a camera on one arm that "sees" the objects that people with tunnel vision -- a severely debilitating condition -- cannot. The frames project miniaturized "cartoon" outlines of the peripheral objects onto the lenses, which act as a see-through display, Peli says. He is developing the eyeglasses with Westwood-based MicroOptical Corp., which makes eyewear that is a "personal media viewer" for playing games and watching videos.

Tunnel vision affects one in 200 Americans over 55, says Peli, who is also an ophthalmology professor at Harvard University. He compares the effect of tunnel vision, which is caused by glaucoma and retinitis pigmentosa, to viewing the world through a paper towel tube.

At first, the person with tunnel vision can turn his head and eyes toward an object whose outline is brought into in his field of view by the glasses. Soon enough, the outlines themselves should become instantly recognizable, so the wearer won't have to stop, turn, and inspect the same fireplug or lamppost every time, Peli says.

Peli and his colleagues have been testing the glasses with subjects walking on a treadmill through a virtual shopping mall projected before them. Remarkably, the test subjects appear to be able to judge the relative distances of the miniaturized outlines superimposed on their forward field of vision, which means they can avoid new obstacles outside their peripheral view without looking directly at them, Peli says.

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