The Talking Eye

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Technology description

Unmet Need:
Currently, low-vision aids for the visually impaired focus mainly on maximizing remaining vision and fall into one of three broad categories: 1) optical devices, such as magnifying lenses, telescopes and spectacles 2) tablet devices that enable text magnification, and 3) non-optical devices, such as braille keyboards for computer access. Individuals who are visually impaired typically require a number of these devices to perform the various activities of daily life. While low vision aids have traditionally sought to improve reading ability or Internet access, there is now an emerging demand for an electronic travel aid (ETA), which seeks to enhance a visually impaired individual’s ability to navigate outside his or her home environment using an external electronic sensing device that communicates in some way with its user. A device that could “see” for those who could not, and talk to them about their visual environment would help a visually impaired individual’s ability to navigate the world both inside and outside of her home environment
Technology Overview:
The technology is a wearable computer/smartphone-driven optical device with auditory cueing that will utilize forward and rearward-facing cameras with lateral infrared sensing technology capable of sensing depth indoors and thus able to detect obstacles and transmit aural avoidance and navigation instructions. The device also reads text captured in the viewfinder via an earpiece connected to the device by bone-conducting, Bluetooth-enabled headset to a visually handicapped user. Bone conducting headphones were chosen to deliver aural cues without completely interfering with the user’s natural hearing, a requirement expressed in previous surveys of visually impaired users.

Application area

A novel component of this work is the real-time software that transforms dense 3D sensor data into navigational auditory cues for visually impaired users, capable of running on commercial off-the-shelf mobile platforms.

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