Helping *the* *visually impaired* SHOP

'Vision' Challenge

There are 1.3 million legally blind people in the United States. They face routine obstacles at the supermarket. The advent of miniaturized robotics, voice-recognition and object-recognition software now opens up the possibility of increasing independence for people with low vision.

Calit2 is developing a variety of so-called "assistive" technologies. Among them: GroZi, a project funded by Calit2 and under development the computer vision lab of UCSD computer science professor Serge Belongie.

While still in its early stages, the GroZi project has already demonstrated proof-of-concept in tests of the underlying technology.

If these portable devices that "see" can help the visually impaired navigate their environment and find objects and locations, they could eventually be adapted for use in a wide range of settings, including airports and bookstores.

Navigational Feedback System for the Blind

Calit2 researchers are developing GroZi, a device which combines a mobile vision system and ZigZag, a student-developed haptic feedback system that guides the user's fingers via dual servos to indicate a direction up or down, left or right.

When complete, the GroZi system will allow a shopper to navigate the supermarket, find a specific aisle, read aisle labels and then check key words by spell-checking against grocery categories. The box then scans the aisle for objects that look like specific products on the shopper's list, which is compiled online and downloaded onto the handheld device before going to the store.

The technology involves sign reading, object recognition and text-to-speech notification. One component of GroZi now under development is called Texty. It's a real-time text detection and optical character recognition system. It uses text-to-speech to read out the contents of a sign it sees. The system will be adapted and optimized for embedding inside the device, but has already proved successful in tests.

> **People have been very positive. They are happy to see computer vision applications being designed to help people.**
>
> *Serge Belongie,* Prof, UC San Diego

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