

TITLE:

CAT-EYE: AN ASSISTANCE SYSTEM FOR INDEPENDENT SHOPPING

FULL ABSTRACT TEXT:**Author**

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Description

Personal shopping is among the hardest activity for physically challenged people (especially those using motorized wheel chairs) as well as visually impaired and/or elderly people with physical disabilities. The described invention is an attempt to assist people with or without disabilities for independent shopping. The invention uses a RFID scanner to scan product information that is then displayed on the screen of a wearable computer. The design includes 1) earpiece, 2) display visor, 3) Bluetooth connectivity, 4) RFID scanner, all mounted on a 5) eyewear that the user can either purchase or rent from the retail store. For visually impaired people who may face difficulty in reading information on the display; the information can also be translated to an audio format using common text readers.

Background

Recent surveys say that approximately 200,000 people use a motorized vehicle in the United States alone. Assisted home living studies show that over 50 percent of population older than 70 years needs assistance in their daily activities (Population Reports, "Americans with Disabilities, 1997" P70-73). Activity limitations limit most motorized wheelchair bound and visually impaired people from everyday activities. The life of a person restricted to a wheelchair is full of challenges that restrict even those actions taken for granted by the everyday person. Such activities are paramount to the development of a person. Independent shopping allows people to engage in a (more or less) social activity that brings them out of their homes and in contact with the community, helping them develop social relationships that are otherwise restricted. Most importantly, independent shopping allows these individuals to take control of their lives; and limit their dependence on other people.

However, the average retail shop is not set up to handle the physically challenged individual, with products placed at heights that are inaccessible and product labels that are illegible and unreadable. In most cases a physically challenged individual, restricted to a wheelchair has such impairments that the simple act of lifting one's arms to reach for a product is a challenge. Even people with impaired vision have problems reading tags and labels on products or shelving. In the midst of such restrictions; trying to shop in a common retail store is an impossible task without aid. This design integrates multiple technologies in an attempt to bring the independent shopping experience one step closer to physically challenged people.

Methods

The invention (which we call Cat Eye) proposes to use specially designed eyewear with a barcode/RFID reader, eye glass and Bluetooth wireless link built-in. A clip on viewer (like Micro Optical Corp's SV6 viewer <http://www.microopticalcorp.com/>) may also be added to the consumer's existing eyewear for the same purpose. In this system the customer can mount the Cat Eye system on her existing eyewear or can rent/borrow the Cat Eye system from the grocery store itself. When the customer is interested in a product, she simply pulls up to the product shelf. Using the joystick on the wheelchairs controller, she can ask the RFID detector mounted on the Cat Eye to scan the RFID tag attached to the product or on the product shelf. The computer then displays the product information and the unit price of the product on the Micro Optical visor. The information can also be heard through the ear piece; the computer uses a simple text-to-speech software to accomplish this. The customer now has the option to either add the product to the virtual shopping cart or cancel it. This process can be repeated till the user finishes her shopping and wishes to checkout. Once the user decides to checkout, the information in the virtual cart can be transmitted to the central database. At this point the customer can pick the goods up herself or ask the vendor to arrange a home delivery. This method simplifies the checkout process and nullifies the pain of carrying the products for an individual bound to a wheel chair. Hence put simply, this invention integrates the simplicity of online shopping with the social experience of physical shopping.

Results

This invention will eventually create a better shopping experience for physically challenged, old elderly people and people with visual impairment or activity. The design is currently under development and a provisional patent has been applied for. Since this design is in conceptual development stage; development of a prototype is necessary to evaluate this product's full potential. We are currently working with several organizations and research centers to design and test this prototype.

The biggest impediment to the design of such a system is convincing retail stores to develop databases that can be accessed and retrieved by the assistive systems like Cat-Eye. With major retail stores shifting from bar-code to RFID, developing the network links become easier. However, before transferring this product into the everyday shopper's hands, more research is required with focus groups, and possibly user studies using the actual prototype.

CONCLUSION

In the above abstract we have described an invention called Cat Eye in which an interactive user interface helps physically challenged individuals to independently shop. This device is an intermediate technology between online and window shopping and at the same time help the retailer to sell their products to a wider range of consumers. The intention of the project is to fashion a simple and effective method of shopping that meets the needs of every genre of shopper.