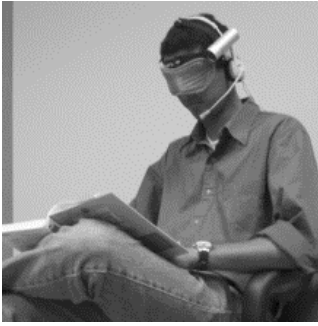


iCare-Reader Portable Reading Device for the Blind



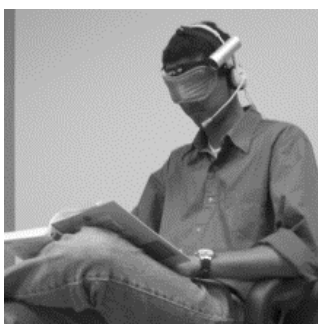
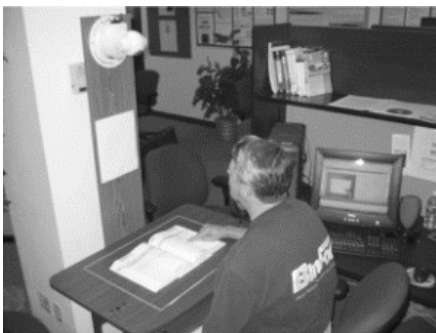
iCare-Reader Abstract

iCare-Reader Portable Reading Device for the Blind According to the world health report of 1997, there are about ten million blind and visually-damaged/weakened people in the forty five million blind people world-wide. Though there are many existing solutions to the problem of helping people who are blind to read, however none of them provide a reading experience that in any way similar things that of the sighted population. Especially, there is a need for a portable text reader that is low-priced and easily available to the blind community. A truly portable text reader would allow the user to take the reader to the print, rather than bringing the print to the reader. This paper describes our efforts to design such a device - solution is iCare-Reader Portable Reading Device for the Blind.

Video

What is iCare-Reader?

iCare-Reader Portable Reading Device for the Blind it is truly good solution for blind person. using iCare-Reader Portable Reading Device for the Blind solution blind people can easily read books. there are mainly 3 phase in Phase 1 is aimed at developing a tabletop-based reader for use/military service in libraries,schools, and (after high school) institutions. It allows people who are blind to easily read books and other printed materials. Phase 2 is aimed at developing a portable version of the iCare-Reader Portable Reading Device for the Blind that is the size of a brief-case, and which can be used at home or carried to any other desired location by the user. Phase 3 is aimed at developing a wearable iCare-Reader Portable Reading Device for the Blind that allows the user to read print wherever they go, including textbooks, signs, restaurant menus, and selling machines.



How does iCare-Reader Works?

Phase 1 - The Table-Based Book Reader

The first phase of the iCare-Reader project involves the development of a table-based book reader early model that is good for use/military service in a library. Figure 1 shows our current early model. The figure shows a user seated at a desk-sized workstation, with a book open in front of him. A digital video camera with a computer-controlled tilt and turn/rotate(machine/method/way) is mounted above the desk. Buttons are given on the tabletop for controlling the book reader. A desktop computer controls the camera, and responds to the user input.

When the user pushes a button instructing the book reader to read the open page in the book,the camera, under the control of software running in a desktop computer, takes a snapshot of the table. Image processing software then decides/figures out the exact position of the book on the table. Using the resulting coordinates, the camera is zoomed in on the page to be read.

(more than two, but not a lot of) reading modes are given. A "Table of Contents" mode can be used to read the titles of the chapters, and the page numbers where each chapter begins. Anal most the same "index mode" can be used to read the index at the back of a book. When the user decides/figures out the desired page number, a "page number" mode says the page numbers as the user turns the pages of the book. When the desired page is reached, the "Text"mode is used to read the text on that page. A special "finger watching and following" mode allows the user to guide the reader, backtracking when a very hard passage must be re-read.

The table-top book reader is meant for use/military service in libraries, and added/more early models are being built for use/military service in the different on-campus libraries at Arizona State University. Hopefully other libraries will also be prepared with these book readers in the future. However, people who are blind will not always be able to travel to a library to read books.For this reason, Phase 2 involves the design of a portable book reader.

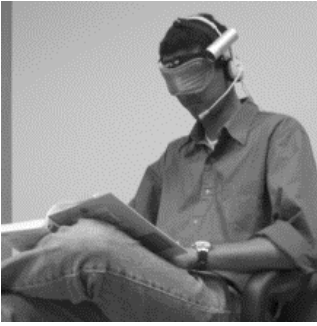
Phase 2 - The Portable Book Reader

It is expected/looked ahead to that in the near future, greatly advanced and highly fancy (or smart) smaller cameras and computer technologies will allow the development of a portable book reader early model, which can be carried in a (small case to hold papers). The user would then be able to place this (small case to hold papers) on a table at a location of his/her choice and read a book. It is expected/looked ahead to that the portable book reader will use an almost the same tilt-and-turn/rotate camera as in the table-top-book reader, though the portable system will be much smaller and lightweight for true portability. The (moving ahead or up) into Phase 2 is mostly dependent upon the development of the necessary smaller camera and computer hardware.

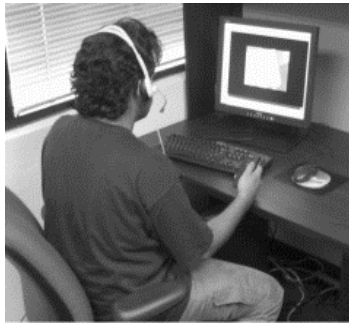
Phase 3 - The Wearable Text Reader

Phase 3 involves the development of a lightweight wearable text reader, which can be used for reading common print, such as signs, (food-dispensing machines) and paper printout text. This text reader would consist of a miniature video camera in a pair of (lenses worn on the face that improve vision) and a belt-mounted PDA-sized computer, as describe (before that/before now).As in the case of the portable book reader, this early model must wait for advances in technology.

However, there is one significant research problem that will need to be overcome in order to make this approach practical. Since the camera will be aimed by head movements, instead of a computer-controlled tilt-and-turn/rotate (machine/method/way), there will be a need for an interaction rules of conduct between the computer and the user, in order to aim the camera at the text to be read.



(a)



(b)

In order to begin research in this area, we have built some head-mounted camera early models, using commercial Fire wire digital video cameras. Figure 2(a) shows one of these early models in use. Here a sighted user wearing the head-mounted camera has been (covered the eyes of) to test out (in a way that's close to the real thing) blindness, but can communicate (by speaking/related to speaking) with a sighted person at a remote location through a headset. Figure 2(b) shows that remotely located person seated in front of a video monitor, which displays the video stream that is being (recorded on a camera or computer) by the head-mounted camera.

These two people then work together (by speaking/related to speaking), via their 2-way voice link, to aim the camera at the book and to read the contents of the page. As they work together to (accomplish or gain with effort) this job, the video and the sound streams for the whole session are recorded and (stored away) for later study. The goal of this experiment is to learn what types of interactions are used between pairs of humans to aim and focus the camera at the book and to travel safely through the book to find the desired content. These interactions can then be (agreed-upon) into rules of conduct, and the human in front of the video monitor can be replaced with a computer system that puts into use these same rules of conduct with voice (creation/combination) and voice recognition devices.

What's the advantage of iCare-Reader?

- Blind persons can easily read books using iCare-Reader Portable Reading Device for the Blind.
- using iCare-Reader Portable Reading Device for the Blind, no need of reading, voice system is there so just listen.
- iCare-Reader Portable Reading Device for the Blind is lightweight, portable, wearable, unobtrusive reading device that individuals who are blind can take with them anywhere, and use in all types of environments