Adaptive Computing Lab

Handout on OCR

Excerpt from American Foundation for the Blind website:

http://www.afb.org/Section.asp?SectionID=4&TopicID=31&DocumentID=1283

Optical Character Recognition Systems

Optical character recognition (OCR) technology offers blind and visually impaired persons the capacity to scan printed text and then speak it back in synthetic speech or save it to a computer. Little technology exists to interpret graphics such as line art, photographs, and graphs into a medium easily accessible to blind and visually impaired persons. It also is not yet possible to convert handwriting, whether script or block printing, into an accessible medium.

There are three essential elements to OCR technology—scanning, recognition, and reading text. Initially, a printed document is scanned by a camera. OCR software then converts the images into recognized characters and words. The synthesizer in the OCR system then speaks the recognized text. Finally, the information is stored in an electronic form, either in a personal computer (PC) or the memory of the OCR system itself.

The recognition process takes account of the logical structure of the language. An OCR system will deduce that the word "tke" at the beginning of a sentence is a mistake and should be read as the word "the." OCR's also use a lexicon and apply spell checking techniques similar to those found in many word processors.

All OCR systems create temporary files containing the texts' characters and page layout. In some OCR's these temporary files can be converted into formats retrievable by commonly used computer software such as word processors and spreadsheet and database software. The blind or visually impaired user can access the scanned text by using adaptive technology devices that magnify the computer screen or provide speech or braille output.

Current generation OCR systems provide very good accuracy and formatting capabilities at prices that are up to ten times lower than a few years ago. If you have a PC, the price range for a PC-based OCR system is $1,300-$2,000. Self-contained OCR systems and those that come bundled with a PC are in the $4,800-$5,500 range.

Now that it is possible to choose from among several different OCR systems, other considerations have become as important as price.

Does the OCR system:

- require installation into a PC or is it a self-contained unit?
- recognize a wide variety of typewritten and typeset documents including books, magazines, mail order catalogs, newspapers, and bank statements?
- maintain the layout of the original text?
- recognize columns of text with a minimum of user intervention?
- require a minimum of computer knowledge to operate?
- come with documentation that is easy to understand and in an accessible medium?
- provide "online help" that can be accessed while using the system?
- come with ongoing technical support from the manufacturer?
- support different types of scanners, that is, flat-bed, sheet-fed, hand-held, and so on?
- scan material at an efficient speed?
- handle various sizes of paper and horizontally formatted documents?