

# Introducing Assistive Technology in an HCI Course

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## ABSTRACT

This poster describes part 1 of the 2-year project “Integrating Assistive Technology into an Undergraduate Computer Science Curriculum from an HCI Approach,” funded by the National Science Foundation. The intent of this phase of the project is to introduce the topic of computerized aids for the disabled (generally called assistive technology (AT)) as one-to-three week curriculum modules as part of a typical human-computer interaction (HCI) course offered for senior Computer Science majors. This poster will briefly describe some of the topics to be covered, how these topics fit within HCI concepts, sample assignments, and the laboratory equipment used to support demonstrations and assignments.

## Categories and Subject Descriptors

H.1.2 [Models and Principles]: User/Machine Systems – *human factors*. K.3.2 [Computers and Society]: Computer and Information Science Education – *computer science education, curriculum*. K.4.2 [Computers and Society]: Social Issues – *handicapped persons/special needs*.

## General Terms

Human Factors.

## Keywords

Assistive Technology. Disabilities.

## 1. INTRODUCTION

Assistive technology is increasingly available to either help compensate for a disability or to provide accessibility to information and services, and to in general improve the quality of life of the disabled. Computer scientists, and specifically HCI professionals, have an expertise in developing and evaluating devices from a usability perspective. However, currently this expertise is seldom directed at the AT field. As a consequence, many AT devices are poorly designed from a usability perspective (and rarely covered within an HCI course in any depth), resulting

in extensive training needs for AT, poor utilization by AT clients, and abandonment of the AT by the user. This is exacerbated by frequent poor matching of devices to persons with disabilities. Involving computer professionals in the development of new devices, evaluation of available AT devices, the matching between persons with disabilities and appropriate AT devices, and subsequent training and support, should improve the overall usability, adoption, and acceptance of AT.

## 2. PROFESSIONAL NEEDS

There is also an increasing need for computer professionals who are familiar with assistive technology in two specific domains: (1) in support of company employees who have a disability and require accommodation, and (2) in support of clients or customers of a company who may require access to company information, services, and products by ensuring that company products and information meet requirements for accessibility. As more employees, clients, and consumers demand accommodations, the need for personnel to evaluate, recommend, install and configure, provide training, and maintain (in addition to research and design) assistive devices will likewise increase.

## 3. AT IN HCI

Assistive technology has obvious intersections with many issues that are classic HCI topics: human factors (e.g. range of motion, cognitive abilities, psychology issues); interaction devices (alternate keyboard designs, pointing devices, and selection mechanisms); interaction methods (Morse code, voice recognition and output, scanning techniques, word expansion, word prediction); modes of communication (single or multi-switch, audio and voice, alternative languages); web accessibility (mechanisms that interfere with AT devices or techniques, dealing with graphics for the visually impaired, audio captioning); and usability testing (user/device matching).

The purpose of this poster is to illustrate how assistive technology can be incorporated into computer science as a valid method of demonstrating basic human-computer interaction principles.

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