

## Wireless Assistive Services for People with Disabilities

Project: Assistive Campus  
PI: Ramesh Rao, Prof, Jacobs School of Engineering; UCSD Division Director, Cal-(IT)<sup>2</sup>  
Paul Blair, Cal-(IT)<sup>2</sup> Postgraduate Researcher  
Funding: Blasker-Rose-Miah Fund; Cal-(IT)<sup>2</sup>  
Division: UCSD  
Corporate Partners:  
Start Date: April 2003



Celebrated physicist Stephen Hawking made speech synthesizers famous a generation ago. But such assistive technologies for people with disabilities, even today, tend to be expensive, unwieldy, and easily damaged (requiring down time for repair or replacement). The resulting inconveniences can dramatically affect the disabled person who counts on the technology to interface with the outside world in person or over the Internet.

Now, with funding from Cal-(IT)<sup>2</sup> and a \$75,000 grant from the Blasker-Rose-Miah Fund of the San Diego Foundation, postgraduate researcher Paul Blair is developing a prototype system to deliver what he has termed wireless assistive services. The idea is to enable people with disabilities to enjoy anytime, anywhere access to assistive technology using commodity wireless devices. The first example of such a service is a portable, low-cost speech synthesis system that runs on wireless-enabled, commodity PDAs. Blair has enhanced the text-to-speech capability by developing a series of custom "buttons" that can be

***"We are especially excited about this project, because it will expose many individuals to next-generation assistive technologies. Not only will UCSD researchers be able to study and develop wireless, assistive technologies but, through our Cal-(IT)<sup>2</sup> living labs, individuals in the community will have opportunities to sample the results early on."***  
– Paul Blair, Cal-(IT)<sup>2</sup> Researcher

tapped by the user to quickly form spoken words to convey common thoughts or basic needs, like ordering in a campus café. Current capabilities include the ability to type text or tap the buttons on a PDA, sending the information over a wireless link to a server, with the resulting synthesized speech played back on the PDA.

The application already runs on the HP iPAQ and the previous generation HP Jornada, but work is underway to make the system work on Palm Pilots and cell phones as well. Also, steps are being taken to interface with the ActiveCampus Project, which will provide location and contextual information that can be used to customize the communication buttons in real-time.

Location information will permit the next assistive service to be deployed within the Assistive Campus effort: verbally assisted navigation for blind pedestrians. Blair is investigating the use of enhanced GPS receivers to permit location determination within half a meter, enough to permit precise outdoor navigation. Indoors, where GPS may not be usable, he will use the ActiveCampus system which is ideal in this environment with its location determination based on wireless access point signal strengths. Blair is seeking funding from industry and private foundations to support further development, including user trials.

Contact: Paul Blair (858) 822-2058 [pblair@ucsd.edu](mailto:pblair@ucsd.edu)