Automated braille writing tutor wins Touch of Genius prize

March 25 2015, by Byron Spice

A student and teacher at the Mathru School for the Blind near Bengaluru, India, practice with the Carnegie Mellon University Braille Writing Tutor. Credit: Carnegie Mellon University/TechBridgeWorld

An innovative device developed by Carnegie Mellon University's TechBridgeWorld research group to help visually impaired students learn how to write Braille using a slate and stylus is the winner of the

2014 Louis Braille Touch of Genius Prize for Innovation.

The $20,000 Touch of Genius prize recognizes technical innovations that promote Braille literacy. It is presented by the National Braille Press' Center for Braille Innovation and is sponsored by the Gibney Family Foundation. The prize will be presented April 2 at an awards ceremony at the Microsoft New England R&D Center in Boston.

TechBridgeWorld is a research group within Carnegie Mellon's Robotics Institute that develops state-of-the-art technology that is accessible and relevant to technologically underserved areas of the world.

CMU students began work on the Braille Writing Tutor in 2006 and have since developed different versions of the tutors, which have been field-tested in India, Bangladesh, Tanzania, Zambia and other nations where Braille typewriters and specialized keyboards, common in developed nations, are not readily available.

According to the World Health Organization, 90 percent of people with visual impairments live in developing countries. For these people, full literacy can be achieved only by first learning the skill of using a slate and stylus to create the embossed dots of Braille writing.

Writing in Braille with a slate and stylus is not intuitive. In Braille, each character is formed on paper using a subset of six embossed dots placed in a cell of two columns and three rows. To create English Braille characters, letters are written backwards and from right to left, so that when the paper is removed from the slate and turned over, the characters read from left to right. The automated tutor, which connects to a laptop computer, provides a student with audio feedback to address challenges associated with learning this skill.

TechBridgeWorld has made a version of the device's hardware

specification and software available for download to help anyone build their own tutor. Many students, faculty and staff involved with TechBridgeWorld also developed a battery-powered Stand-Alone Braille Writing Tutor with onboard computing for use where reliable computers and external power are not routinely available.

"The Braille Writing Tutor has been one of our most successful projects to date," said M. Bernardine Dias, associate research professor of robotics and director of TechBridgeWorld. "We've seen the profound impact it has had on blind and visually impaired students and their teachers in the communities where we have been fortunate to test the tutor, and its potential for impact in so many more communities around the world. We are thrilled and humbled that the Touch of Genius Prize judges saw fit to recognize this achievement."

The project was made possible through the efforts of many sponsors, partners and Carnegie Mellon students, faculty and staff.

Provided by Carnegie Mellon University

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