THE AUTOMATED BRAILLE WRITING TUTOR

Using Computing Technology to Enhance Braille Education for the Visually-Impaired in Developing Communities

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Research group at Carnegie Mellon University

Technology with a Global Heart

Work primarily with underserved communities

Founded in 2004 by Dr. M. Bernardine Dias

Numerous projects in education and assistive technology

www.TechBridgeWorld.org
MOTIVATION

- 87% of the world’s 314 million blind and visually-impaired live in developing communities\(^1\)
- Literacy rate is estimated to be under 3%\(^2\)

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BRAILLE WRITING

- In developing communities, braille is almost always written with a slate and stylus.
- Challenges include:
  - Delayed feedback
  - Specialized braille paper may be expensive or limited in supply

Motivation | Design | Demonstration | Continuing Work

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Braille Writing Tutor

- Started out as 2 independent study projects by 2 Robotics Ph.D. students
- Partnered with the Mathru School for the Blind near Bangalore, India
- Low-cost and educational assistive technology device
  - Teaches braille writing
  - Immediate audio feedback
  - Guides writing and corrects mistakes

Motivation | Design | Demonstration | Continuing Work
DESIGN

Motivation | Design | Demonstration | Continuing Work
Demonstration
GLOBAL PARTNERS

Motivation | Design | Demonstration | Continuing Work

BANGLADESH
CHINA
INDIA
QATAR
TANZANIA
ZAMBIA

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CUSTOMIZATION

- Language options
  - English, Arabic, Chinese, French, and Swahili braille
- Game activities
  - Animal Sounds, Hangman, MusicMaker, Dominoes
- Instructional voices
  - Local contacts with local accents
- Some hardware modifications on site also possible

Motivation | Design | Demonstration | Continuing Work
FUTURE

- Protective and child-friendly casing
- Cost reduction
  - $135 per unit at production quantities of 10
  - Less than $100 per unit at higher production level
- Stand-alone version
  - Battery-operated
  - On-board computing
- Expansion of field tests
  - Longer-term testing
  - Additional partners

Motivation | Design | Demonstration | Continuing Work
THANK YOU!