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Electronic Braille Document Reader

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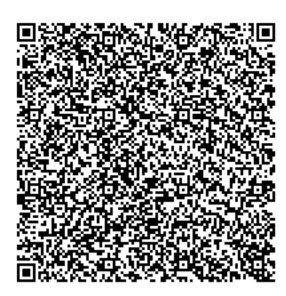
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Abstract
The Electronic Braille Document Reader project was to evaluate the feasibility of a device which could read Latin text and convert it to Braille pattern which could be read through a single Braille cell. A device which mimics the advantages of an e-book reader but suited to the needs of the blind.

Introduction

Braille books tend to be big and always require a flat stable surface to rest while reading by sliding fingers across the page to feel the character patterns. There are currently many voice synthesizers which can read text out and Dictaphones which can be used for recording notes. But they have drawbacks of their own. Braille allows users to make notes while listening to speeches; where talking into a Dictaphone would not be appropriate. Braille also allows users to read notes while also listening to a speeches, which isn't possible with speech synthesizers.

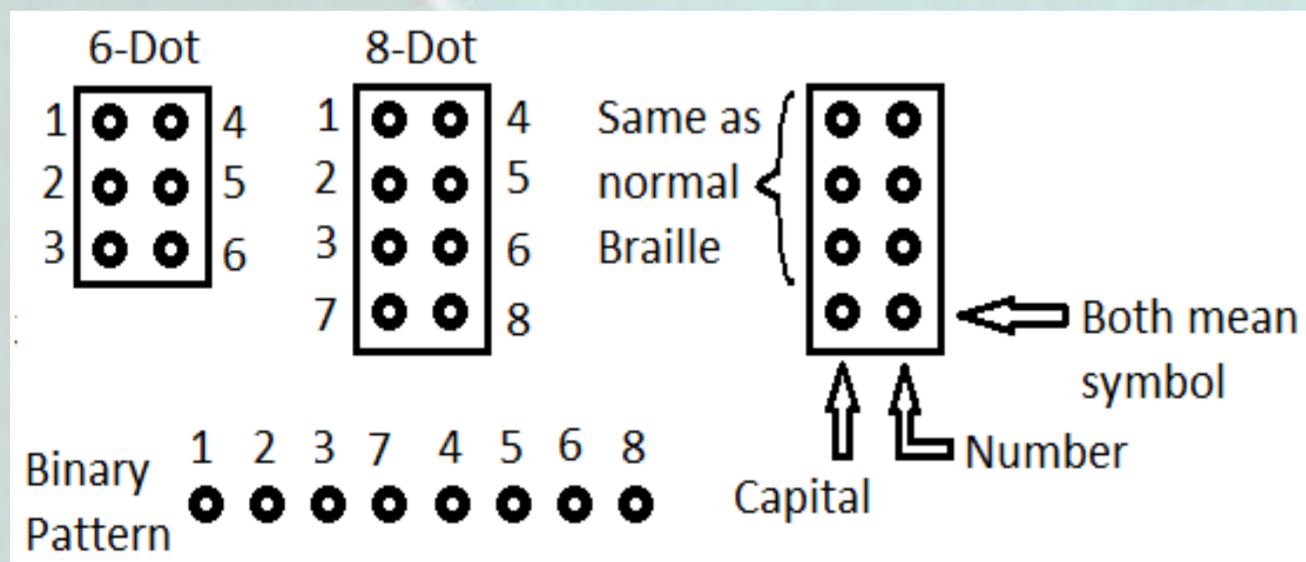
Currently there are Refreshable braille Displays which allow blind people to read text documents from the computer. But these devices are expensive, bulky and are not portable, thus limiting their use.



Braille

Braille consists of a cell of six/eight raised dots arranged in two columns of three/four dots, which the user can read by feeling using a finger

Instead of the user scanning the dots on a page, the Electronic Braille Document Reader autonomously changes the dot pattern on the braille cell which the user reads without moving their finger. The figure below shows how the six-dot Braille was extended to eight to incorporate the character detail in a single Braille cell



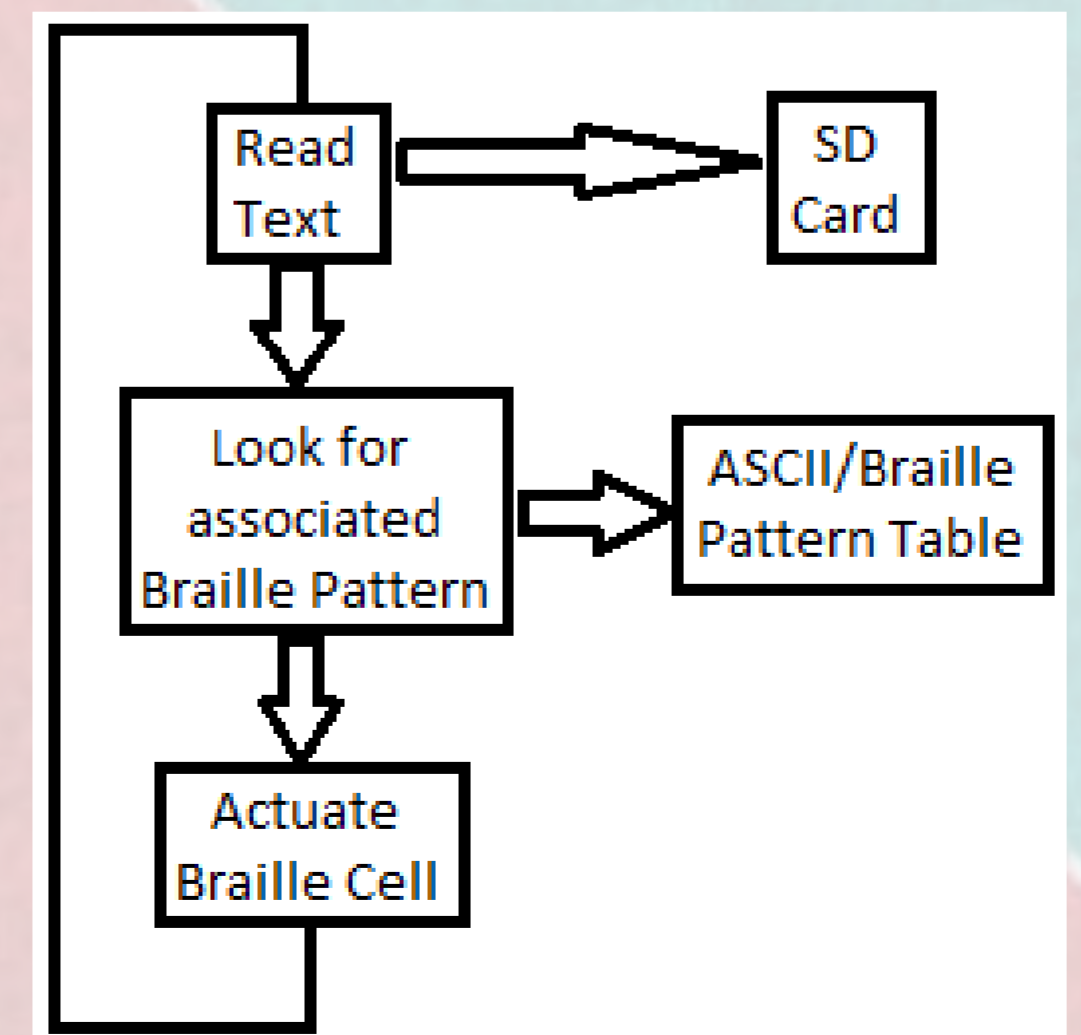
Electronic Braille Document Reader

The Electronic Braille Document Reader displays text on a single braille cell by actuating dots in a braille pattern on a finger module. The Electronic braille document reader overcomes many issues associated with Braille. The issue of carrying bulky books is overcome by allowing multiple e-books to be saved in external memory. Also by convert text from ASCII to braille, it gives the blind access to books which are never published in braille. The single braille cell design reduces the bulk of the device allowing it to be portable. An additional benefit of the device is that it can be integrated into a glove and worn, thus giving the user freedom to carry on with other tasks while reading.



Specification

The device will be built around a microcontroller, able to read the information from a SD card and actuate "pins" for Braille dots in the glove. The device reads text from a text document saved on the SD card, which is then compared to a table which associates each ASCII character to its associated Braille pattern. The Braille pattern is the actuated on the finger module for a set time, where it can be felt by the user before it moves on to the next character on the file



Conclusion

Current research has proved the feasibility of the Electronic braille document reader. And consumer research conducted on the device has supported the view that The Electronic Braille Reader will provide substantial benefit to blind and visually impaired individuals. The ease of use and low cost also encourages the use of Braille reading with the young.

The benefits of the Electronic Braille Document Reader will revolutionise reading for the blind. It gives them access to limitless literature and the freedom to carry it around with them.

Further development of the device could add the ability to subscribe to news feeds which would wirelessly download news and other content directly on to the Electronic Braille Document Reader

