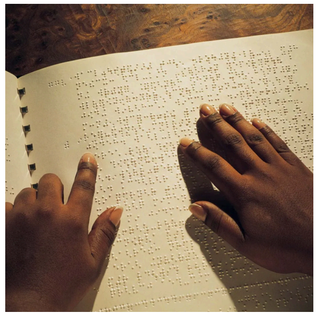
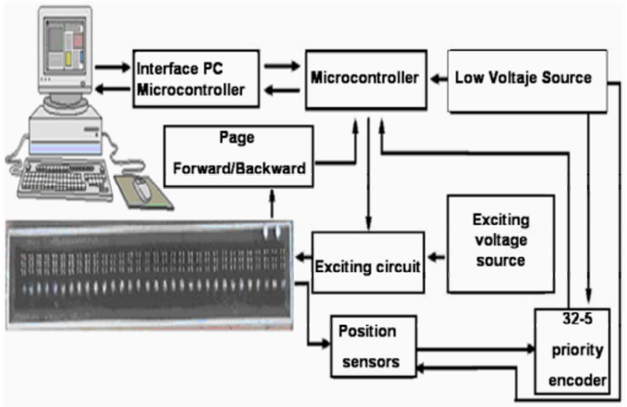
PROJECT DOT READER - BUILDING A KINDLE FOR THE BLIND



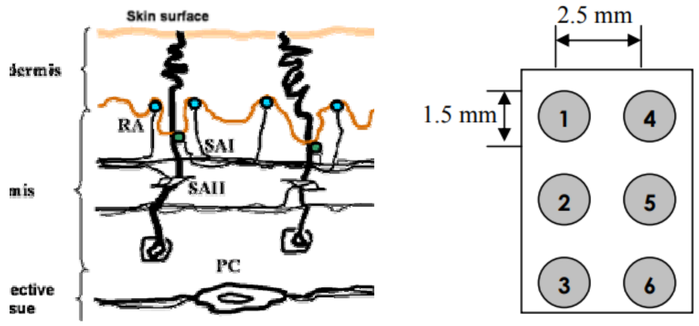
The limited availability, portability, and storage space, along with the high production costs of braille books, pose significant challenges for individuals with visual impairments in accessing a diverse range of literature and educational materials. We set out to try to solve this.

APPROACH

Our concept envisions a revolutionary approach to Braille displays, aiming to create a highly portable and compact device by employing electrical impulses as a tactile medium for Braille characters. This innovative approach eliminates the need for mechanical pins, offering advantages such as adaptability for different languages and Braille codes, reduced wear and tear, and precise tactile feedback control. The device's software can provide a wide range of literature, from books to digital content, enhancing the user experience with intuitive navigation and voice-assisted technology. By seamlessly blending traditional Braille with digital access, this product contributes to greater accessibility and inclusivity for the visually impaired, while acknowledging potential challenges related to power consumption, durability, and user training.



UNDERLYING CONCEPT



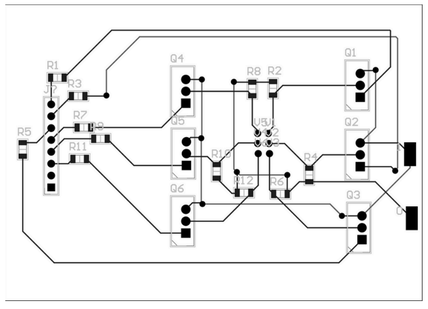
Electrostimulation is a technique that allows for the selective activation of mechanoreceptors in the skin, with distinct effects depending on the polarity of the electrical current used. It is well-documented that when a cathode (negative) current pulse is applied to the skin's surface, it predominantly triggers the activation of nerves oriented horizontally to the skin's surface. Conversely, when an anode (positive) current is employed, it leads to the activation of nerves that are vertically oriented with respect to the skin's surface, including axons such as the RA. This phenomenon showcases the precise control and versatility of electrostimulation in engaging specific nerve pathways, which has applications in various fields, including neurophysiology and therapeutic interventions for sensory and motor function.

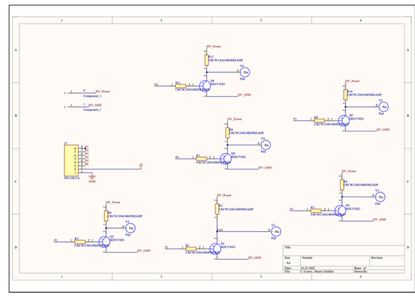
CONSTRAINTS

Constraints of Electrostimulation as described in the text:

1. Polarity-dependent selectivity: Polarity of the electrical
2. Safety considerations: Safety measures and potential risks involved.
3. Polarity Dependency: Selectivity depends on current polarity.
4. Limited Orientation Specificity: Targets specific nerve orientations only.
5. Depth Unclear: Depth of stimulation to be figured out.
6. Variable Nerve Sensitivity: Individual variations may impact results.

PROGRESS





We analysed the electrical approaches to making the sensation of the nerve impulse, both the current and voltage based approaches.
Having done a research on professors working in the same domain, we figured out that Professor Tuhin could help us in the matter, and discussed with him the methodology. We also met Professor Mani.
We have had a prototype of how the impulses would be transmitted and felt.
The PCB for the same has also been constructed.
We are using Darlington transistors to control the high voltage currents using a low voltage system