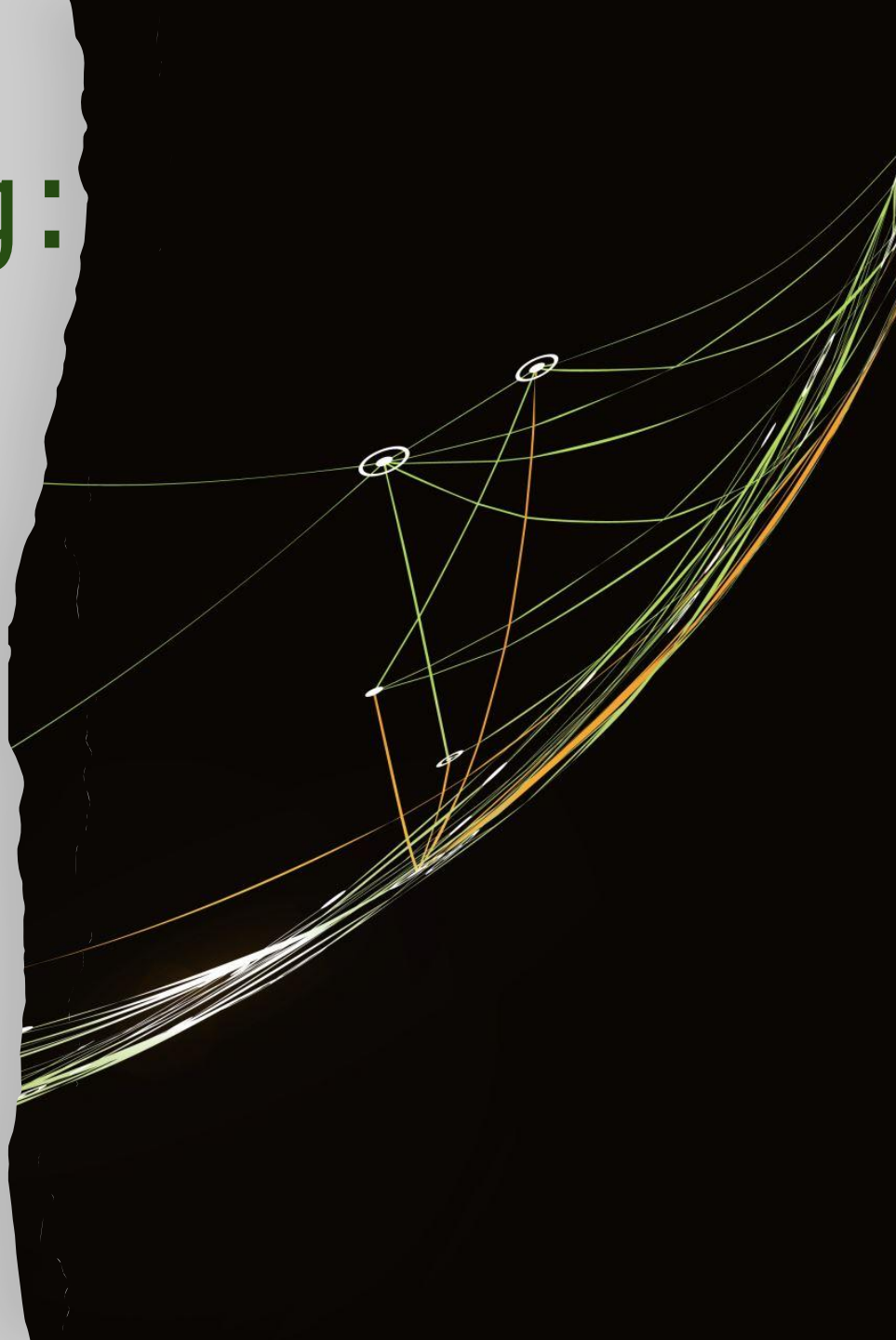
World of Engineering: Ideation



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Broad Problem Statement

Helping the differently-abled(mute or blind) people to navigate the world.

- Blind people need external aid to navigate the world. They face challenges accessing and reading standard printed text.
- Facilitating effective two-way communication between mute and deaf individuals presents a significant societal challenge.

What is its societal importance?

According to the World Health Organization (WHO), approximately 253 million people worldwide are visually impaired. Out of these, about 36 million people are completely blind[1].

It would help blind people to become more independent in their daily lives. It will help them to access normal text which will open the world of educational opportunities for them. They will be able to read all kinds of reading materials which will allow them to acquire new knowledge, explore their interest of domain, develop their ideas in order to succeed in their life.

Our product will allow mute people to actively participate in social activities, helps build connections, and reduces the sense of isolation that can be experienced by mute individuals. It will enhance the overall well-being and self-esteem of mute individuals and also promote a sense of empowerment.

Why is it non-trivial and worth solving?

There have been various technological advancements aimed at assisting visually impaired individuals in accessing information and our idea presents an unique approach to this challenge.

This is indeed worth solving as braille board is not easily available to blind persons and there is no way blind people can access normal visual text without external assistance. We strive to make a product that can help visually impaired individuals to access any normal text through a smart Braille Pad.

Communication issues exist between mute people and normal people. A Layman does not understand sign gestures. With the help of existing technology we can assist mute people better communicate with people who doesn’t understand sign language. Through our product the sign gestures will get concerned into visual text as well as with voice assistance.

Existing Technology

Some existing solutions that help overcome these challenges are as follows:

Braille: Braille is a tactile writing system that enables blind individuals to read through raised dots.
Optical Character Recognition (OCR): OCR technology converts printed text into digital formats that can be read by text-to-speech or screen reader software.
Screen Readers: Screen reader software converts text on a computer screen into synthesized speech or braille output. It allows blind users to navigate digital content, including web pages, documents, and emails.
Tactile Graphics: Tactile graphics are raised images or diagrams designed to be explored by touch.
Audiobooks and Podcasts: Audiobooks and podcasts offer blind people the opportuni to access a wide range of reading materials, including novels, textbooks, and informational content.
Assistive Technology Apps: There are numerous mobile applications available that assist blind individuals in accessing printed text.
Talking book libraries: Many countries have talking book libraries that provide blind individuals with access to a vast collection of recorded books and magazines.

Components that we will go into the solution

The following components that we will use:

1. Special Spectacles
2. Camera
3. Image Processing Software
4. Optical Character Recognition (OCR)
5. Text-to-Speech (TTS) Conversion
6. Braille Conversion Software
7. Braille Display Board
8. User Interface and Controls
9. Power Source
10. Connectivity Options
11. Accessibility and Usability Considerations
12. Safety and Comfort Features
13. Testing and Feedback Processes

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References

[1]https://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment