CAPSTONE
PROJECT PROPOSAL

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Introduction

A person who is not able to hear as well as someone with normal hearing – hearing thresholds of 25 dB or better in both ears – is said to have hearing loss. Hearing loss may be mild, moderate, severe, or profound. It can affect one ear or both ears and leads to difficulty in hearing conversational speech of loud sounds.[1]

Statistically speaking, in the range of 2-3 children for every 1000 children born alone in United States suffer from hearing impairment and globally, around 466 million people suffer from the same. According to a source, it is estimated that by 2050, over 900 million will have disabilities in terms of hearing. In economical terms, hearing losses poses annual global cost of US $750 billion and over 5% of world's population suffer from this medical condition.[2]

Seeing the rapidly changing and ever-expanding face of information technology, where IT is being integrated into every sector ranging from mining to medical, what if we can provide an IT supported solution and making it more efficient by integrating Artificial Intelligent system into it. If successfully implemented, we might be able to revolutionise the medical industry in terms of hearing aid and support.

Amalgamation of existing technologies can help create a solution which can aid deaf people to understand other person's words using sign language interpreter. Computer vision systems integrated with AI technology can help translate sign language to letters and words. Such technology can help innovate ways we can aid hearing impaired people.

Scope

Looking at existing available technological solutions, a combination of them can possibly result into an efficient solution to this problem. Utilising Computer Vision along with trained models on existing datasets can help in developing crutches for hearing.

Our main idea revolves around helping deaf people to understand sign language without learning it. Simply by performing such signs and being interpreted and translated to letters and words can help people understand it with high ease. The main population this technology can help are the people suffering difficulty in learning sign language.

Studies show it is easy to learn how to read written words instead of sign language. Hence, a simple translator from signs to words can help aid millions of people if implemented successfully. Modern technological innovations like high definition cameras and faster processing power, such solutions can be developed easily.

This solution can be applied almost everywhere including educational institutions, government offices to commercial places. This can help in easy learning and working activities. Also, including future possible developments during seminars and other public speaking events, real-time prediction systems can provide a very efficient method of delivery.

Approach

With current information we decided to divide the task on to four primary steps:

1. Understand the problem
2. Look out for existing solutions
3. Acquire and process dataset
4. Train and implement prediction model

The first and second steps are currently being undertaken while the third and fourth will be undertaken after a thorough examination of existing technologies.

The dataset should be processed upon first (Cleaning and preprocessing) to ensure our model is trained to provide optimised accuracy. The prediction model will be classifying the images to predict the symbol.

The output will be used to further predict the word by combining them. This can help hearing impaired to read and understand what other person is trying to convey.

Conclusion

Although looking like a small task to complete, only after diving deep into more in this area can provide us exactly how complex it will be to implement such solution. But looking at the wide array of reach, this solution can be implemented, it can surely prove to be a high worth technology.

References

1. https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss
2. https://www.nidcd.nih.gov/health/statistics/quick-statistics-hearing