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**COMPUTER ENGINEERING**

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**SIGNCONNECT: BRIDGING COMMUNICATION GAPS WITH BIDIRECTIONAL SIGN LANGUAGE APPLICATION**

**COMPUTER ENGINEERING PROJECT REPORT**

**COLLEGE OF ENGINEERING**

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**1. CHAPTER ONE: INTRODUCTION.**

**1.1 BACKGROUND.**

Conferencing tools have been in existence since the invention of the internet. Conferencing tools are any type of online tool that allows for communication between two or more participants in different locations from any part of the world through the internet with the help of a reliable internet connection, allowing for the sharing of video and audio in real-time.

They make communicating by sending video and audio content in real-time over the internet with an in-person-like experience easier for business professionals, educators, remote workers, and families to organize presentations, collaborations, project management, and interactive business meetings with employees and potential employers at the comfort of their homes for online classes and virtual meetings.

However, a problem arises when it comes to how people with speaking and hearing defects would be able to use such tools, as such features as sign language recognition and real-time audio-to-sign language or audio-to-text conversions are not a part of these conferencing tools, hindering access to information shared and interactions with co-workers, friends, and family.

Signconnect is a web-based conferencing tool that aims to improve communication between all individuals with or without defects, bridge the communications gap by being able to incorporate and translate a lot of languages into sign languages and vice versa, and overcome the challenges that people with defects go through when trying to communicate with others using conferencing tools.

**1.2 PROBLEM STATEMENT.**

It is estimated that by 2050, over 700 million people - or one in every ten people - will have disabling hearing loss across the globe.

There has been an increasing demand for conferencing tools, and these tools have affected the lives and functions of businesses and people in general in many possible ways.

However, a conveniently available, affordable, and widely accessible conferencing tool to close the communication gap between the DHH communities is not present in existing communication tools, raising concerns about how such people are to use these tools.

**1.3 RESEARCH AIM AND OBJECTIVES.**

We aim to break the barrier that exists when it comes to the Deaf and hard-of-hearing community and how they are to use conferencing tools. The objectives we hope to achieve are:

* To create a conferencing software that enables real-time sign language translation for communications between DHH persons and other people, We aim to create a software that recognizes sign language and can translate audio-to-text, to all users.
* To create an optional avatar feature. This feature is aimed at helping people with DHH by translating text and audio into sign language to help in their understanding and usage of the information being shared on the application.
* To create a user-friendly and accessible application that would be able to perform common functions and be easy to use.
* To create an application that support multiple languages and multiple sign languages used across the globe for easier communication between different people.

**1.4 SIGNIFICANCE OF STUDY.**

This study will bring about an improvement in the way information is been shared between DHH persons and other people irrespective of their defects and language barrier.

Traditional sign language tools though very helpful lack integration with sign language recognition and real-time audio-to-sign language or audio-to-text therefore limiting DHH persons from using such tools, they are sometimes expensive and not accessible to other people in remote areas.

Signconnect will be a free accessible tool to help DHH persons to be able to communicate with real people in different parts of the world with ease and comfort.

**1.5 ORGANIZATION OF PROJECT STUDY.**

The technologies used in this project are initially described in more detail in Chapter Two. This chapter contains all the facts and knowledge needed to fully comprehend the project.  
  
  
A summary of previous research and relevant works is also provided in Chapter Two, with an emphasis on the benefits and shortcomings of these works.  
  
A research methodology is chosen and covered in Chapter Three. In addition, specifics regarding the suggested system's overall design, development method, and execution are provided.

Building on the ideas presented in Chapter Three, Chapter Four offers an examination of the suggested system together with the design findings.  
  
Lastly, Chapter Five provides a summary and conclusion of the entire study, outlining the difficulties faced and offering suggestions for the future.

**1.6 CONCLUSION.**

This chapter has introduced the need for a novel solution to bridge communication gaps between the DHH and hearing communities. By developing a video-based communication system with an integrated sign language avatar, this project aims to create a more accessible, inclusive, and user-friendly communication tool, empowering the DHH community, fostering greater social interaction and understanding, and ultimately contributing to **SDG 3: Good Health and Wellbeing** by ensuring accessible healthcare communication for DHH individuals, and **SDG 10: Reduced Inequalities** by creating equal communication opportunities and promoting social inclusion for people with disabilities.

**REFERENCES.**

Number of DHH persons in Ghana.

<https://www.utoronto.ca/news/sign-language-needs-policy-protection-ghana-u-t-expert#:~:text=The%20Ghana%20National%20Association%20for%20the%20Deaf%20(GNAD)%20says%20approximately,as%20an%20aberration%20in%20Ghana.>

Estimated number of DHH persons in the world.

<https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss>