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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 since the inception of the internet. These tools, akin to traditional calls and social media, have enhanced communication by eradicating geographical barriers through a device that facilitates seamless video sharing and real-time audio interactions.

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 people with speech and hearing impairments are to use such tools. Features such as sign language recognition and real-time audio-to-sign language or audio-to-text conversions are absent from these tools, hindering access to information shared and interactions with co-workers, friends, and family.

Signconnect, a web-based conferencing tool that aims to improve communication between all individuals with or without such impairments, bridges this communication gap by being able to incorporate and translate a lot of languages into sign languages and vice versa, and overcome these challenges faced by people in the Deaf community when trying to communicate with others using these tools.

**1.2 PROBLEM STATEMENT.**

Disabling hearing loss, estimated to affect over 700 million people globally i.e. one in every 10 or () people by 2050 brings about the need for accessible conferencing tools. Conferencing tools being a part of our lives currently after the pandemic still lacks inclusivity especially in the area of the Deaf and hard-of-hearing (DHH) communities. This absence in the digital communication landscape leaves much to be desired especially when SDG goals **3** & **10**: **Good Health and Wellbeing**

**Reduced Inequalities** are involved.

**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 for real-time sign language translation for 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 implement an optional avatar feature for audio-to-text and vice versa. 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.
* Develop a user-friendly and accessible application for seamless communication.
* To create an application that support multiple languages and sign languages worldwide for easier communication between different people.

**1.4 SIGNIFICANCE OF STUDY.**

Signconnect represents a shift in information sharing, promoting inclusivity within the Deaf and hard-at-hearing (DFF) community and beyond as communication barriers are torn down in the digital space. Unlike traditional language tools, Signconnect is not only free and accessible but also integrates sign language recognition, fostering global communication for persons in the DHH community.

**1.5 ORGANIZATION OF PROJECT STUDY.**

* **Chapter Two**: Describes the technologies used in detail.
* **Chapter Three**: Presents a summary of previous research, the research methodology, and the system's design, development, and execution details.
* **Chapter Four**: Examines the suggested system and design findings.
* **Chapter Five**: Provides a summary, conclusions, challenges faced, and future recommendations.

**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. [[link](https://www.utoronto.ca/news/signlanguageneedspolicyprotectionghanautexpert#:~: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.[[link](https://www.who.int/newsroom/factsheets/detail/deafnessandhearingloss)]