**Vartalaap Setu**

**MID TERM VII SEMESTER SYNOPSIS REPORT**

*Submitted in partial fulfillment of the requirement of the degree of*

**BACHELORS OF TECHNOLOGY**

*to*

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**CERTIFICATE**

This is to certify that the Project Synopsis entitled, “**Vartalaap Setu**” submitted by “**Lakshay Yadav, Harsh Kaushik, Khushal Yadav, Kunal Sharma”** to **The NorthCap University, Gurugram, India,** is a record of bonafide synopsis work carried out by them under my supervision and guidance and is worthy of consideration for the partial fulfilment of the degree of **Bachelor of Technology** in **Computer Science and Engineering** of the University.

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Dr. Swati Gupta, Assistant professor

Date: ..17/12/2024…..

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**Abstract**

“Vartalaap Setu” is striving to establish communication for people with physical and mental challenges where their voices can be heard without the help of intermediaries. Vartalaap Setu bridges the communication gap between sign and text/voice, so we all can easily interact in a better way.

The main aim of the "Vartalaap Setu" is to create a conducive environment where everyone feels appreciated, connected with continuously, be it any number of abilities. It places a world where those who fall into the margins of traditional communication are suddenly free to express themselves without fear, in stark contrast. All the technology was created to convert sign language to text or voice and vice versa, so that everyday deaf people could communicate more freely, showing their views, ideas and feelings.

With a user-friendly interface and accessible design, “Vartalaap Setu” fosters a sense of independence and dignity for physically and mentally challenged individuals. It not only enhances their ability to communicate but also promotes inclusivity and equality in personal and professional spaces, offering them the freedom and respect they deserve in society.

**Introduction**

**Background**

We started out with the idea of a broad, social impact project which could help people in their daily problems improving their quality of life. Once we both explored different ideas, we eventually realized that we wanted to focus on one area — communication for everyone; including those who have special needs. After evaluating further, we found one big gap that there is no chat tool developed today, which can be used across even parts of health system where there are physically disabled and mentally challenging. People with special needs do have problems to communicate their issues properly. They mostly use sign language, but very few individuals can understand or speak it.

This led us to mirror on **Vartalaap Setu**, a web-based software which makes use of the idea of bridging the hole in interplay from an individual utilizing signal language and an individual not using signal language.

The name tells what it does and that's the pure optics of building Vartalaap Setu — where ‘Vartalaap' stands for communication and ‘Setu' stands for bridge. A website which gives ability to the handicapped (Physical & Mental) people, where they can communicate by their own without a mediator.

**Vartalaap Setu** has the potential to impact various fields:

1. **Healthcare Sector** Now doctors can interact with physically disabled and mentally challenged patients in a better way using Vartalaap Setu (healthcare) sector. Therefore, patients develop a better understanding of the medical information they receive and are able to voice their concerns. The app uses sign language to text/voice and on the other hand and makes understanding more understandable that leads smoother healthcare experience.

2. **Coffee Shops and Restaurants (e.g., Starbucks, Costa Coffee):** This tech can be used in outlets to help deaf/mute customers communicate properly with the staff. For instance, they can place sign language-to-text converters at ordering kiosks to enhance communication while simultaneously reducing order errors and increasing customer service.

3. **For Educational Institutions** — Mainstream schools and universities have the most to gain through Vartalaap Setu as it can significantly enhance learning outcomes resulting in a more inclusive environment for deaf or mute students. It assists those who know sign language to communicate with students increasing their understanding and inclusion, both teachers and peers.

And the applications for Vartalaap Setu are almost limitless: in tech companies, retail services — any place where effective communication with disabled persons can change their lives.

**Feasibility Study:**

Our intention is thereby to create an interactive-application which will be able to connect seamlessly, with everyone speaking in translating the voice/text-to-sign and sign-to-voice/text. It is a solution to a problem that many of us just overlook as a social issue and it will also be able to change the lives of millions.

Vartalaap Setu, a buddy in need for every physically and mentally challenged people with the motive to change their daily life at least a bit easier and better by becoming a most trustworthy partner i.e. like a "friend" whose only job is to translate each sign you make elsewhere into text & your spoken language in Sign language wherever required for them. Of course, this application is not a mere tool but a magnificent manner wherein you can significantly improve your independence and dignity in time to come just by combating the communication barrier.

While this is a powerful platform for a host of the platforms we work on, it

This platform can play an important role in numerous aspects of life, from healthcare to education, and from social spaces to professional environments, making the world a more inclusive place for everyone.

**Problem Statement**

In fact, the unavailability of communication for people that are deaf, dumb or hearing impaired is one of the most considerable problems which already plays a great role in determining whether they would enjoy equal status with the others members within society. A lot of the time, current technologies fail to provide solutions which can effectively translate and interpret sign languages. The goal of this project is to tackle this problem and create an interpretation system of hand gestures that can easily facilitate communication between individuals whose uses the sign language with those who are not. Bridging this communication gap can help empower people with disabilities and enable them to participate more fully in education, employment, healthcare, and social interactions.

**Objectives**

The primary objectives of the **Vartalaap Setu** web application are as follows:

– Bridge the Communication Gap: Develop an easy-to-use platform that transcribes and translates sign language to text/voice and vice versa, at the same time having multiple platforms, such as translation device for smartphones.

- Increase Accessibility:Create a solution to help everyone designed for a person with communication barriers, provide them the chance of self-expression without third-party and increasing in Independency and Welcoming society.

– Unite with Different Sectors: Develop an identifiable device that would easily merge into several sectors, ranging from healthcare to education and vendors so that everyone is able access their service.

Empower Individuals: Forge a stronger connection between body and brain for physically and mentally challenged individuals, enabling them to express themselves and making possible a smoother everyday interaction with others.

Communication — a platform that helps people with disabilities but also educates the general population to create a more understanding and inclusive world.

User-friendly Interface: Create a platform that is straightforward, user friendly, and versatile for all sectors to boost communication efficiency.EXP :

**Study of Existing Solution (Implementation-based project)/Literature Survey (Research based)**

Already existing websites-

[**Slait AI**](https://slait.ai/): This web application is currently in development. It is a real-time sign language translator using AI, but it is not available for use yet. The developers will soon release a beta version for testing. The key features of Slait.AI include:

# Sign language to text

# Speech to text

# Video communication

[**Signly**](https://signly.co/): Signly is not available as a public web application. It functions as a sign language service platform, designed to integrate with the websites of Signly’s clients. The main focus of Signly is the deaf community.

[**Text to Sign Language Converter**](https://wecapable.com/tools/text-to-sign-language-converter/): This is a functional web application available for public use. It primarily converts text to sign language, supporting American Sign Language (ASL), Major Sign Language, and British Sign Language (BSL). It shows images one by one, demonstrating how to communicate with a deaf person using sign language.

[**Simax Media**](https://simax.media/?lang=en): This web application also converts text into sign language, but instead of using images, it generates 3D animations performed by customizable avatars. This application was developed in Germany.

[**Signapse**](https://www.signapse.ai/): This AI tool converts text or video into sign language using video or avatars. These avatars perform the sign language, and the platform mainly focuses on video translation, website translation, and transport board translations. Their primary mission is to bridge the communication gap between hearing and deaf individuals using AI. The company is based in the UK.

[**Hand Talk**](https://www.handtalk.me/en/blog/meet-the-hand-talk-sign-language-translator-app/): Hand Talk, a digital accessibility startup and a 2019 Google AI Impact Challenge winner, offers a popular free app known for translating Portuguese into Brazilian Sign Language. The app now also provides English-to-American Sign Language (ASL) translation.

**Comparison with Existing Software Solutions (Implementation Based)**

Slait AI is currently under development and promises real-time sign language translation using AI. However, its unavailability for public use limits immediate access for users needing these services, and potential users may find it challenging to track its progress.

Signly is a service platform which publishers can use to add on-screen sign language via HTML 5 video, targeting the deaf community. With a complete slate of specialization in many other areas, it does not have an open method for the user to interact just like sign language pct between users that serve direct empty translation if they do not use this as media transmitters.

Operational web-based Text to Sign Language Converter, that enables users to convert text into various sign languages such as American Sign Language (ASL) and British Sign Language (BSL). This availability makes it more accessible to a wider audience, however An image-centric communication style may not appeal to all users.

Simax Media distinguishes itself by offering customizable avatars performing sign language in 3D animations. This innovative approach increases user engagement in new ways, but also with the associated need for more processing power.

Another is Signapse, whose avatar interpreters convey sign language via video. Its specialisation in video communication helps the system but also can frustrate users seeking primarily text-based solutions or requiring faster translations.

Hand Talk is tailored to Portuguese and Brazilian Sign Language, with some options for translation to English-to-ASL. As much as it specializes in catering to specific language pairs, it fallshorts of servicing the demands of users that wish for a broader array of sign languages or more features.

**Gap Analysis**

Available only in a restricted way to people Signly and Slait AI encrusts user engagement.

While platforms such as the Text to Sign Language Converter and Simax Media are interactive solutions, but they might not cater to everyone's communication requirements.

However, the availability of platforms such as Hand Talk and Signapse may be limited to only certain languages, which means that these tools would not be useful to those interested in an extensive diversity of sign language options.

Vartalaap Setu on the other hand will make its mark by adding two-way communication facilities. Whereas Vartalaap Setu shall support a two-way translation, other tools only provide one way wherein the text or voice is translated to sign. Rarely before has a protocol (outside the financial industry) been able to target more than one vertical — which, combined with its differentiator alone will distinguish it from.

Vartalaap Setu will provide a more personalized, adaptable, and comprehensive solution that can be integrated across various fields, empowering individuals with communication barriers to express themselves freely and effectively in different settings.

**Gantt Chart**

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**Responsibility Chart**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S.no | Name | Research | Front-end | Model | Back-end |
| 1 | Lakshay |  |  |  |  |
| 2 | Kunal |  |  |  |  |
| 3 | Harsh |  |  |  |  |
| 4 | Khushal |  |  |  |  |

**Technology Used:**

For our project, we used **Streamlit technology** to build its user interface. Writting a web application using Streamlit is as simple as writting a single file and all you need to knnow is python since it does not glossary HTML, CSS or Javascript. It also has buttons, sliders, text inputs, file uploaders and other widgets that creates an interactive user interface.

You can run streamlit applications in your personal computer or can host to the internet using cloud services like free Streamlit Community Cloud or AWS or Azure or Google Cloud.

As for the dataset, we didn’t use just any dataset that was accessible to us. The application uses Google ASL (American Sign Language) images and other images available on the web to match letters to each image and show the word as sign language.

One improvement we plan to implement is integration of a camera that allows the application to accept sign language and transcribe it to text instantaneously. This soud would be acheived letter by letter. Thus, we are studying this feature to terminate it.

**Running Code:**

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**Annexure I: Front page of plagiarism report by guide**

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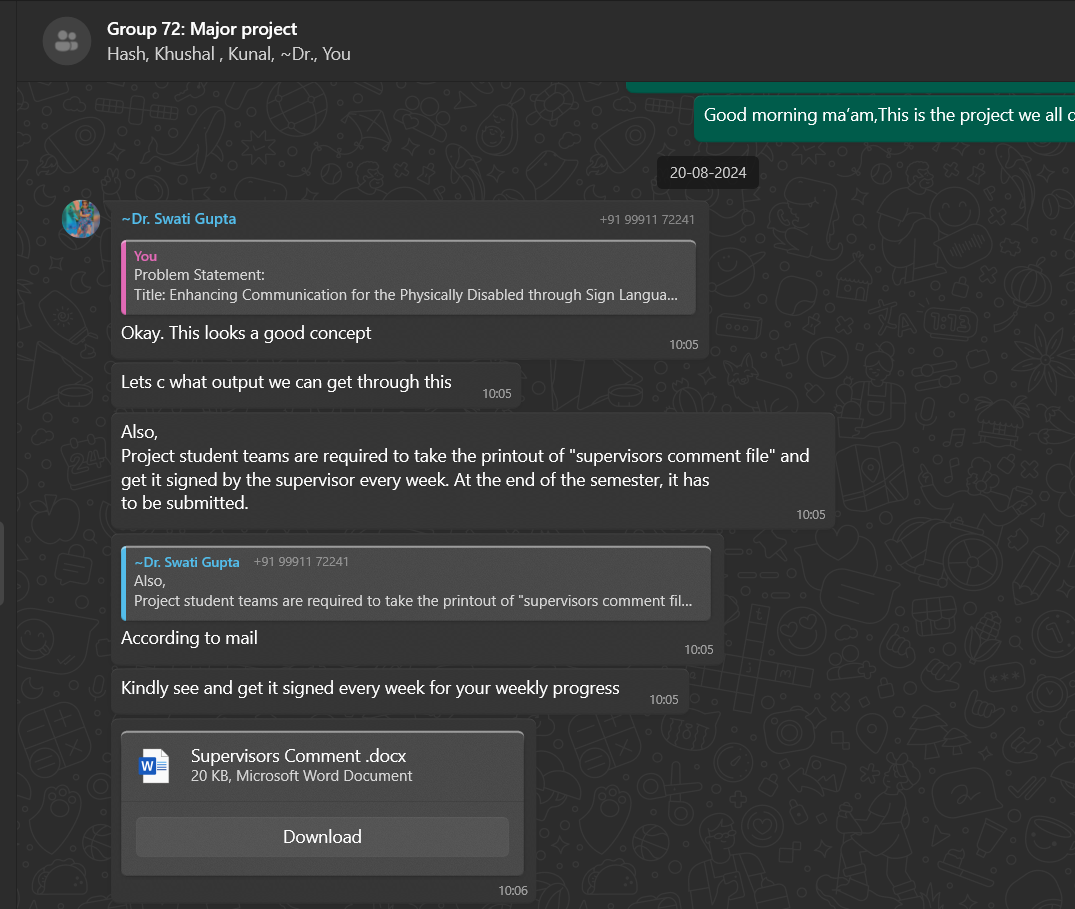
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**Annexure II: Screenshots of Faculty mail / comments from guide**

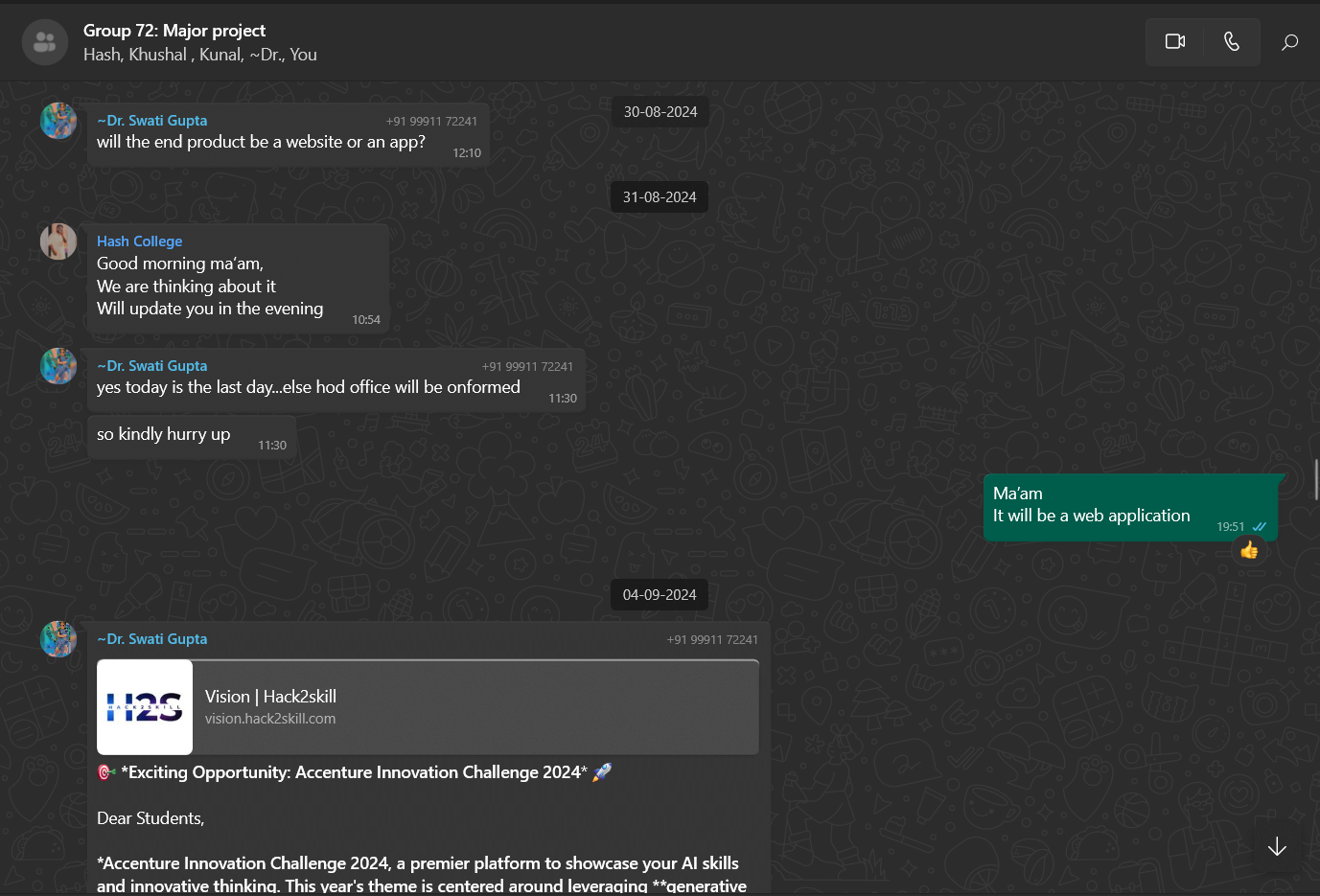
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