

Project Design Phase-I
Proposed Solution Template

Date	14 October 2022
Team ID	PNT2022TMID01421
Project Name	Real-Time Communication System Powered by AI for Specially Abled
Maximum Marks	2 Marks

Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Communications between deaf-mute and a normal person has always been a challenging task. It is very difficult for mute people to convey their message to normal people since normal people are not trained on hand sign language in emergency times conveying their message is very difficult. The human hand has remained a popular choice to convey information in situations where other forms like speech cannot be used. Making communication between deaf-mute people and normal person effective is the problem to solve here.
2.	Idea / Solution description	We aim to develop a system that converts the sign language into a human hearing voice in the desired language to convey a message to normal people, as well as convert speech into understandable sign language for the deaf and dumb. We are making use of a convolution neural network to create a model that is trained on different hand gestures. An app is built which uses this model. This app enables deaf and dumb people to convey their information using signs which get converted to human-understandable language and speech is given as output.
3.	Novelty / Uniqueness	<p>1. Since deaf-mute people are usually deprived of normal communication with other people, they have to rely on an interpreter or some visual communication. Now the interpreter can not be available always, so this project can help eliminate the dependency on the interpreter.</p> <p>2. A web based version of the application will increase the reach to more people.</p>

		3. Integrating hand gesture recognition system using computer vision for establishing 2-way communication system.
4.	Social Impact / Customer Satisfaction	Sign language is a visual language that is used by deaf people as their mother tongue. Unlike acoustically conveyed sound patterns, sign language uses body language and manual communication to fluidly convey the thoughts of a person. It is achieved by simultaneously combining hand shapes, orientation and movement of the hands, arms or body, and facial expressions. It can be used by a person who has difficulties in speaking or by a person who can hear but could not speak and by normal people to communicate with hearing disabled people. Therefore developing an intelligent system to recognize the sign language and convert it to voice will be massive aid for deaf-mute people to interact with the social world without any hassle and also since the machine takes care of the conversion the need for the normal people to have a good amount of knowledge will be eliminated.
5.	Business Model (Revenue Model)	The subscription model is an increasingly popular business model that involves a company selling a service via a subscription as opposed to a one-off product. If the service is going to be helpful as well as useful most customers will choose to auto-renew their subscriptions, which ensures that they always have the service provided to them. Because of recurring sales, this model allows you to predict what the yearly revenues are going to be, which is fantastic when trying to bring in new investors.
6.	Scalability of the Solution	As the technology advances the AI can improvise and more no of people can be incorporated with the system and the system can be extended to incorporate the knowledge of facial expressions and body language too so that there is a complete understanding of the context and tone of the input speech.