ProjectDesignPhase-
IProposedSolutionTemplate

TeamID	PNT2022TMID50471
ProjectName	Project-Real-TimeCommunicationSystem PoweredbyAIforSpeciallyAbled
MaximumMarks	2Marks

ProposedSolutionTemplate:

Projectteamshallfillthefollowinginformationinproposedsolutiontemplate.

S.No.	Parameter	Description
1.	ProblemStatement(Problemtobesolved)	In our society, we have people withdisabilities. The technology is developing dayby day, but no significant developments areundertaken for the betterment of thesepeople. Communications between deaf-dumbandanormalpersonhasalwaysbeenachallenging task. It is very difficult for deafand dumb people to convey their message tonormal people. Since normal people are nottrained on hand sign language. In times ofemergency, conveying their message is verydifficult. The human hand has remained apopular choice to convey information insituations where other forms like speechcannotbeused.BuildingasystemwithVoiceConversion combined with Hand GestureRecognition and translation will be veryuseful to have a proper conversationbetween a normal person and an impairedpersonin anylanguage.
2.	Idea/Solutiondescription	TheconceptsofMachinelearningalgorithmsand Neural networks were used toimplement a solution. A Convolution Neuralnetwork is used to create a model that issubsequently trained on different handgestures available in the dataset (almostaround a thousand of them). All the handgestures are fed into the model which arethen processed, trained, and segregatedusingacertainmachinelearningalgorithm.Acertain No. of records are taken aside tocontinuously train the model and therestareused to evaluate the learning of the builtmodel. Clustering algorithms are used tosegregategesturesintogroupsbasedonthedifferenttypeofattributesavailablefora

		handgesture.This information subsequentlygets converted to human-understandablelanguageandspeechisgivenasoutput. In the other way, the same process isrepeated where the input is given as a set oftextcommandsfromtheendusers,andtheyget convertedtorecognizedhandgesturesbythe learning model which are then displayedto the impairedpeople. A Web application is built which uses thismodel. This Web application enables deafanddumbpeopletoconveytheirinformation
3.	Novelty/Uniqueness	A unique feature that sets apart this webapplicationisthatitnotonlyprovidesapath for the impaired people to communicatecomfortably, but also the regular people tocommunicate/respond back to them. Theregular two-way form of communication isachieved in this process. The regular peoplemake use of simple textual handwrittenscripts to feed into the application as input,for which the impaired people receive thesuitablehandgesturesgenerated.Inordertogroup all the available hand gestures basedon attributes, Different clustering algorithmareused.
4.	SocialImpact/CustomerSatisfaction	The usage of this application creates adefinite impact in the society. The end usersconsistingof the regular and impairedpeopleare able to communicate comfortablywithout any form of hassle. Fear of Anxietythat always prevailed among them aresubstantially removed. There is no limitationintheprocessandthecustomersaresatisfiedwiththesystemthatisavailable.
5.	BusinessModel(RevenueModel)	Differentstrategiescanbeusedtoobtainfinancialbenefitfromtheapplication. Initially, almost all of the comprising featurescanbemadeavailablefreefortheendusers,foraspecifictimeperiod.Thiswillallowthemto get acquainted with the software and theneed to use it more and more. Selectivefeatures can be made as paid features astime progresses, by releasing 'Premium' orthe morerefinedversions. Customer feedbacks can be collected on aregularbasissincetheyconstitutetheheart

		of the application. They can be used toimprovethesystemintomorerefinedones.
6.	ScalabilityoftheSolution	There is a lot of potential for this applicationtoexpandandgrow.Thetextualinputthatisreceived from the side of the regular userscan be made to instead accommodate voicecommands. This is an advancement of theprevious feature, and this will allow surplususers to use the software. Though issuesmight be observed during the processing ofthese voice notes, implementation of thesamewouldseeasignificantriseintheNo.of usersmakinguseoftheapplication.