

## Project Design Phase-II

### Solution Requirements (Functional & Non-functional)

Team ID	PNT2022TMID39516
Project Name	Real – Time Communication System Powered By AI For Specially Abled

#### Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Sub Requirement (Story / Sub-Task)
FR-1	Image Data: Hand gesture recognition refers to a computer's capacity to identify human hand gesture sign from a variety of sources, such as photographs, documents, etc., and categories them into ten established classifications. In the realm of deep learning, this has been the subject of countless studies.
FR-2	Website: Web hosting makes the code, graphics, and other items that make up a website accessible online. A server hosts every website you've ever visited. The type of hosting determines how much space is allotted to a website on a server. Shared, dedicated, VPS, and reseller hosting are the four basic varieties.
FR-3	Digit Classifier Model: To train a convolutional network to predict the sign gesture from an image, use the HaGRID database of hand gesture. get the training and validation data first.
FR-4	Cloud: The cloud offers a range of IT services, including virtual storage, networking, servers, databases, and applications. In plain English, cloud computing is described as a virtual platform that enables unlimited storage and access to your data over the internet.
FR-5	Hand Gesture Recognition Image Dataset: The abbreviation HaGRID stands for the HaGRID dataset.

### Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	<b>Usability</b>	Gesture recognition is technology that uses sensors <b>to read and interpret hand movements as commands</b> . In the automotive industry, this capability allows drivers and passengers to interact with the vehicle — usually to control the infotainment system without touching any buttons or screens.
NFR-2	<b>Security</b>	Security requirements ensure that the software is protected from unauthorized access to the system and its stored data. It considers different levels of authorization and authentication across different users roles.

NFR-3	<b>Reliability</b>	<p>The samples are used by the neural network to automatically deduce rules for analysing hand gesture. Furthermore, the network may learn more about hand gesture and hence enhance its accuracy by increasing the quantity of training instances.</p> <p>Numerous techniques and algorithms, such as Deep Learning/CNN, SVM, Gaussian Naive Bayes, KNN, Decision Trees, Random Forests, etc., can be used to recognise hand gesture.</p>
NFR-4	<b>Accuracy</b>	Artificial Neural Network (ANN) based on the training model previously built from 100 images for each gesture. The accuracy rate of hand gesture translation is calculated to be <b>90%</b> .
NFR-5	<b>Availability</b>	Gesture-based interfaces are used in many applications in a variety of fields, such as <b>smartphones, televisions (TVs), video gaming</b> , and so on. With advancements in technology, hand gesture recognition is becoming an increasingly promising and attractive technique in human–computer interaction.