

Define CS, fit into CC

### 1. CUSTOMER SEGMENT(S)

CS

The customers who are going to use our product are the people who are deaf and dumb people of all kinds of ages with no age restrictions.

### 6. CUSTOMER CONSTRAINTS

CC

The constraints that prevent our customers from taking action or limit their solutions are

**Device** - They require a device to run the real time application

**Power** - They require electricity for the device to run

### 5. AVAILABLE SOLUTIONS

AS

It is 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.

**In the past** - We required human labor for this job.

**Now** - We have digital applications which does the job for us which is really efficient and useful.

**Pros** - It really helps deaf and dumb people to their daily work similar to normal people.

**Cons** - In the initial time we require a technician to adapt to the applications interface.

Explore AS, differentiate

Focus on J&P, tap into BE, understand RC

### 2. JOBS-TO-BE-DONE / PROBLEMS

J&P

Conversion of sign language into a human hearing voice in the desired language to convey a message to normal people.

Conversion of speech into understandable sign language for the deaf and dumb.

### 9. PROBLEM ROOT CAUSE

RC

The real reason that this project exists is that due to the medical condition of the people either by birth or due to external factors which are non curable and are prevailing till today.

The need to do this job is that there is nor permanent solution which helps to overcome the problems faced by the people.

### 7. BEHAVIOUR

BE

Our system mainly focuses on the issues to the deaf and dumb

**The deaf** - they express themselves by communicating thorough speech and the job is done by converting them to sign language.

**The dumb** - they express themselves by communicating in sign language and the job is done by converting them to speech.

Focus on J&P, tap into BE, understand RC

Identify strong TR & EM

### 3. TRIGGERS

TR

The reason which triggers the customers to act is the reason that they are unable to communicate with their friends or family or others in a normal way like everyone does.

### 4. EMOTIONS: BEFORE / AFTER

EM

**Before** - They were unable to communicate with others.

**After** - They are able to communicate with others easily than before.

### 10. YOUR SOLUTION

SL

The project aims 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.

### 8. CHANNELS of BEHAVIOUR

CH

#### 8.1 ONLINE

The whole application works through connecting different API's and hence the involvement of technology becomes very essential, so considering this all the conversions of sign language to human hearing voice and vice versa are completely processed internally.

#### 8.2 OFFLINE

The user has to interact with the UI and should perform the required sign language that translates it to human understandable voice and the other person has to listen to the audio generated by the application.

Extract online & offline CH of BE