Idea/Approach Details

- Ministry Category: Department of Empowerment of Persons with Disabilities, Ministry of Social Justice & Empowerment
- Problem Statement: Digital solution for effective learning of persons with specific learning disability.
- Problem Code :#DEPD6
- Team Leader Name: Apoorva Saxena
- College Code:6158

Idea & Solution

Often, people with disabilities (intellectual and otherwise) and ones without have a problem in communicating fluently with each other. People with disabilities have harder access to knowledge resources. *This application will not only help the disabled people to learn and communicate better but also gives a person without a disability to learn the ways to communicate with the PwD.* The application's two parts cater the needs of both the sections of people:

- **For person without disabilities:** the user can give audio/text as input to get the sign language image/video as an output. This way the user can learn sign language and communicate with more ease.
- **For deaf and dumb:** The reverse of the above happens for a deaf & dumb user
- **For person with intellectual disabilities:** We've tried creating a device/application that helps them recognise the objects in their surrounding. The device will capture an image of the object and will process it according to the user and will show the processed image to the user. As, if we want a 5 year old disabled boy to recognise and memorise a laptop, it will be difficult for him, but if the application processes the image and shows it as a machine to play games, to make drawings, he may remember this forever. On the other hand, a 25 year old disabled person will see the same laptop as a device to watch movies, sports, internet through the same application.

Prototype

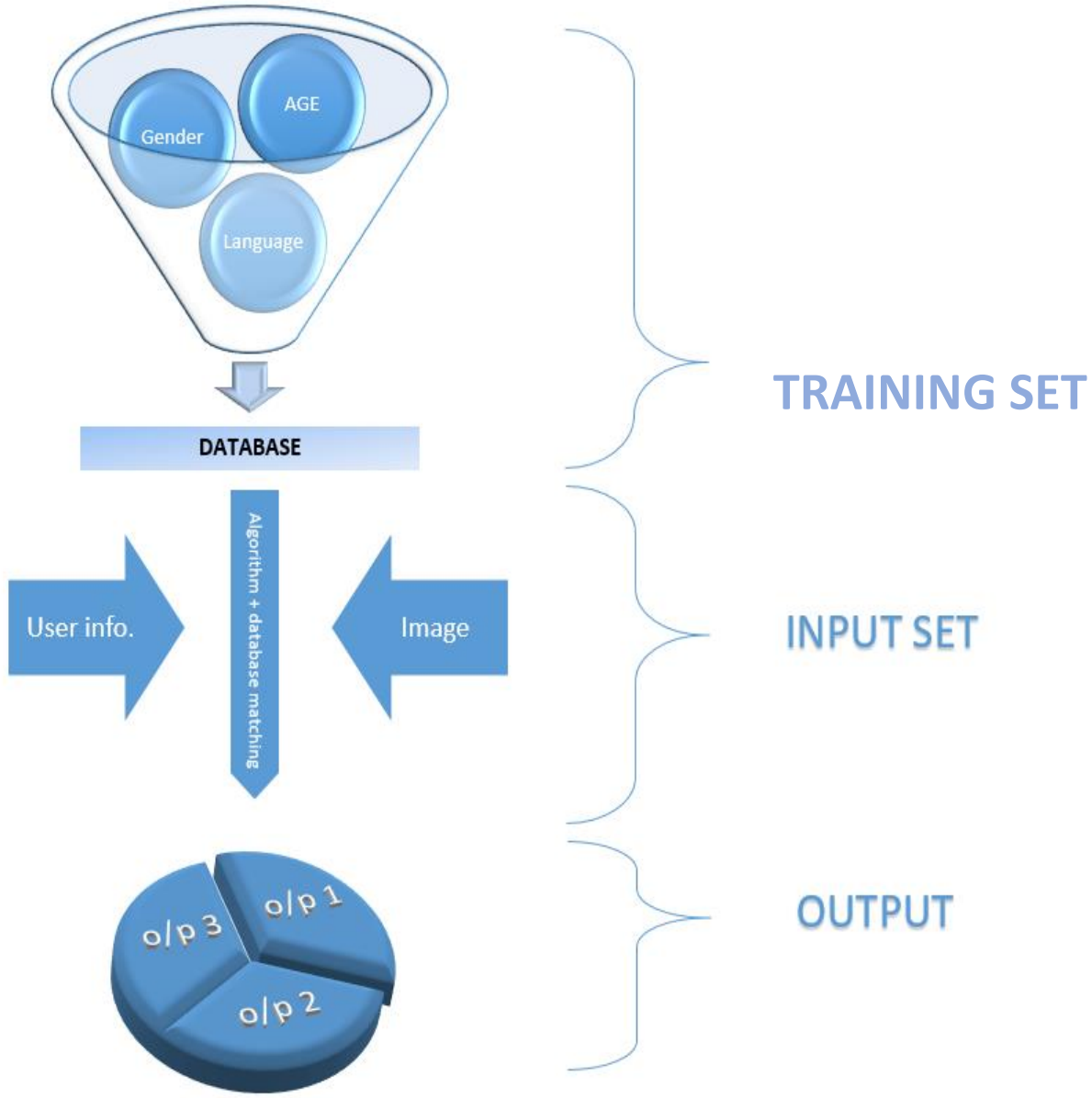
1. Raw data is fed to the database and grouped.

2. Information about the disabled user is fed to the algorithm.

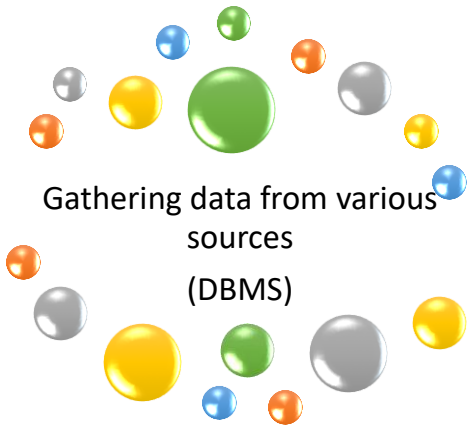
3.A general image/audio/video, which the user is not able to recognize is fed to the algorithm.

4. The algorithm then processes the image and makes it more user friendly to that particular user using Machine Learning.

5. The disabled user gets the information in a manner that he/she can understand.



Technology Stack



Gathering data from various sources

(DBMS)

Dealing unknown data and making homogeneous

(using libraries like PANDAS, NUMPY)

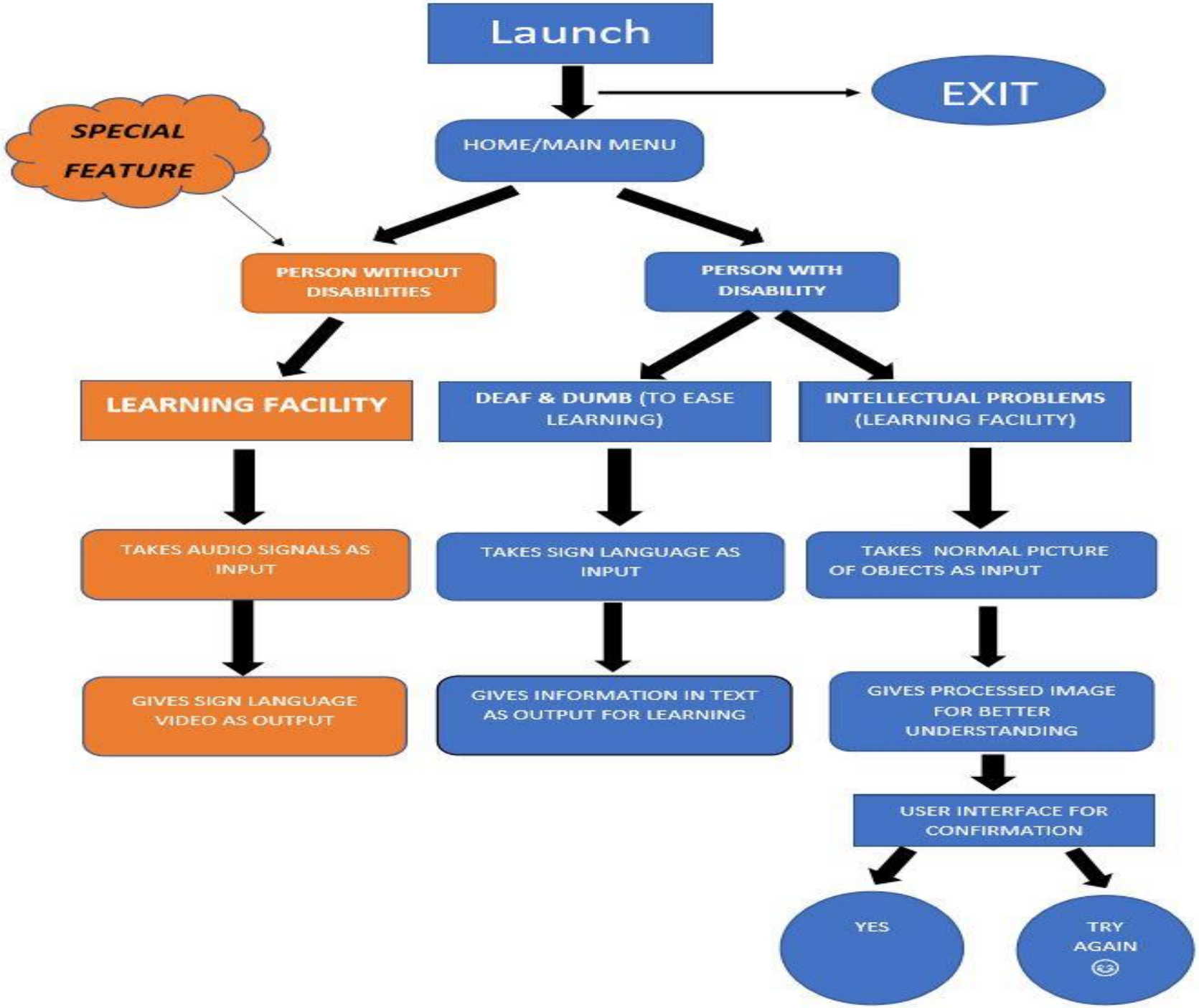
Training data using PYTHON (algorithm, Image Processing)

input and comparision with training set

(Using State Space Search)

Useful Information retrived

Use case


Launch
EXIT
SPECIAL FEATURE
HOME/MAIN MENU
PERSON WITHOUT DISABILITIES
PERSON WITH DISABILITY
LEARNING FACILITY
DEAF & DUMB (TO EASE LEARNING)
INTELLECTUAL PROBLEMS (LEARNING FACILITY)
TAKES AUDIO SIGNALS AS INPUT
TAKES SIGN LANGUAGE AS INPUT
TAKES NORMAL PICTURE OF OBJECTS AS INPUT
GIVES SIGN LANGUAGE VIDEO AS OUTPUT
GIVES INFORMATION IN TEXT AS OUTPUT FOR LEARNING
GIVES PROCESSED IMAGE FOR BETTER UNDERSTANDING
USER INTERFACE FOR CONFIRMATION
YES
TRY AGAIN

Dependencies/show stoppers:

- REQUIRES INTERNET CONNECTION.
- GOOD QUALITY CAMERA (FOR RECORDING).
- MUST HAVE ENOUGH SPACE TO INSTALL THE APP.
- BASIC KNOWLEDGE TO OPERATE THE APP.