SOCIALLY RELEVANT PROJECT-2022

HAND MOVEMENTS RECOGNITION USING IMAGE PROCESSING

Team Members

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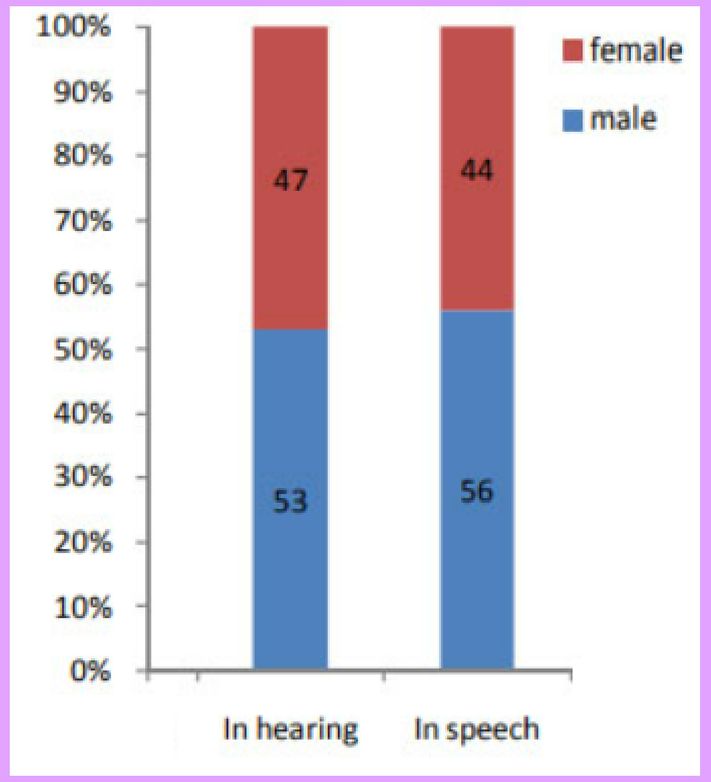
PROBLEM STATEMENT



- Around 12 lakh students are affected with speaking and hearing disabilities in India.
- Students face difficulties in understanding and expressing.
- Communicating with hand gestures require prior knowledge and sometimes may lead to miscommunication.
- This is results in decrease of self confidence and National Literacy rate.

OBJECTIVE

- To develop a Model / Application to aid speaking and hearing impaired students using Image Processing

- Live Conversion of hand movements to text and speech

Hand Movements

Text Conversion

Speech Synthesis

PROPOSAL AND SOLUTION

- Our Project aims to provide a solution using LSTM(Long Term Short Memory) Deep Learning Model to detect a series of hand movements and convert them to text and to speech of phrases / sentences

- The datasets are hand movement videos that are captured frame by frame collected by our own effort

Tools:

- Anaconda Software
- Jupyter Notebook IDE

LITERATURE SURVEY

Name	An efficient method for human hand gesture detection and recognition using deep learning convolutional neural networks
Authors	Neethu, P. S., R. et al.
Model	Convolutionary Neural Network
About	The hand region of the image is segmented from the whole image using mask images. Connected component analysis algorithm is used in order to segment the finger tips from hand image.The proposed hand gesture detection and recognition methodology using CNN classification approach with enhancement technique stated in this paper achieves high performance with state-of-the-art methods.

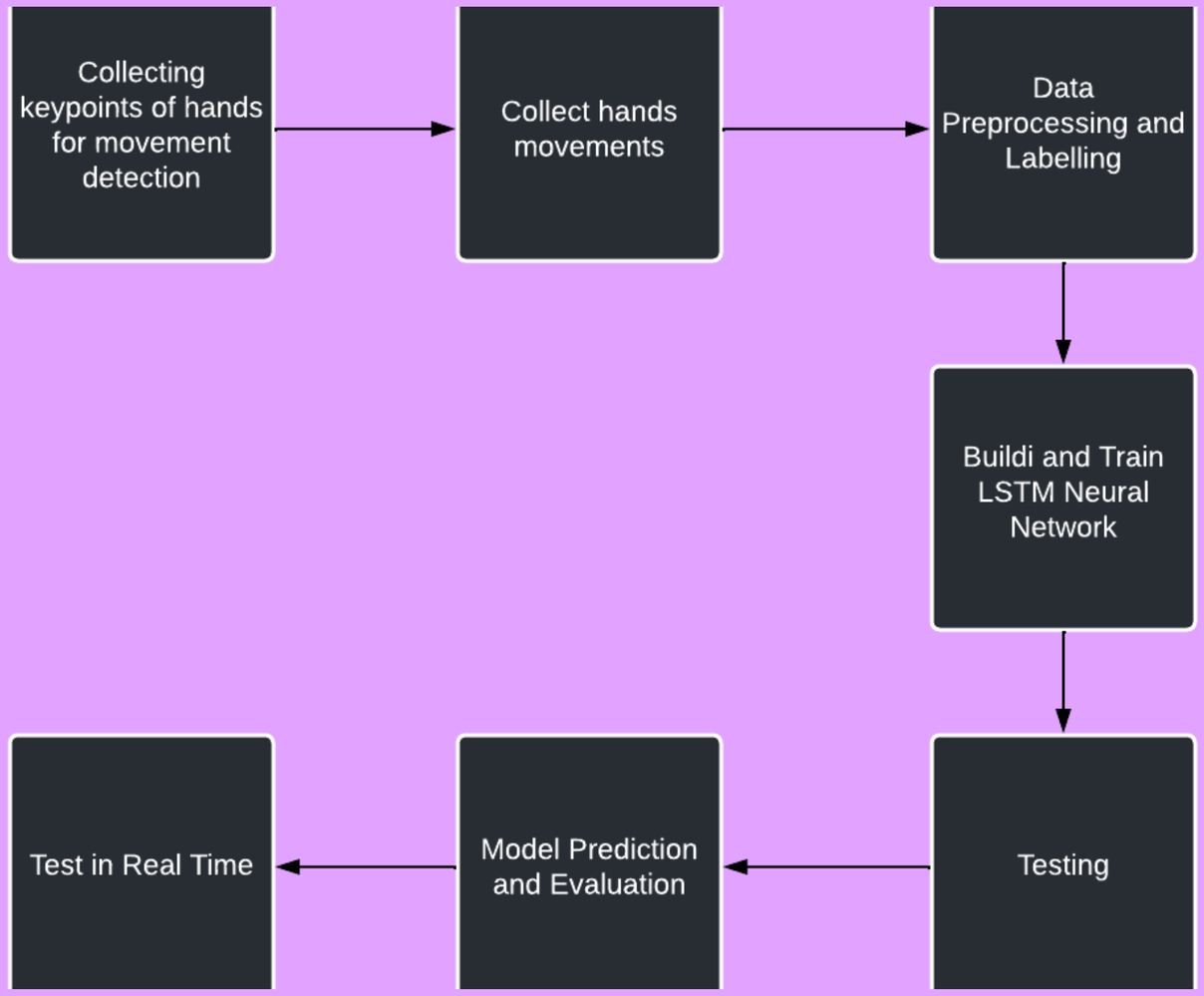
LITERATURE SURVEY

Name	Hand Gesture Detection with Convolutional Neural Networks
Authors	Alashhab et al.
Model	Convolutionary Neural Network
About	They have created a database containing images corresponding to these gestures. Lastly, this database has been used to train Neural Networks with different topologies. They have obtained high accuracies both in localization (96%–100%) and in recognition (99.45%) with Networks that are appropriate to be ported to mobile devices.

LITERATURE SURVEY

Name	Real-time Hand Gesture Detection and Classification Using Convolutional Neural Networks
Authors	Kopuklu et al.
Model	Convolutionary Neural Network
About	They have addressed challenges such as the start and end of the gestures in a video, recognizing gesture once and memory and power was taken care while creating the model. CNN architecture was used to detect and classify the gestures. ResNeXt-101 model achieved an accuracy of 94.04%

ARCHITECTURE DIAGRAM



CONCLUSION

- Our project bridges the gap between the hand gesture communication resulting in appropriate and relative higher accuracy than the former one

- It increases the self confidence of students and increases the literacy rate.

THANK YOU