Smart Aid For Speech And Hearing Impaired Community Using CNN

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Motivation/Introduction

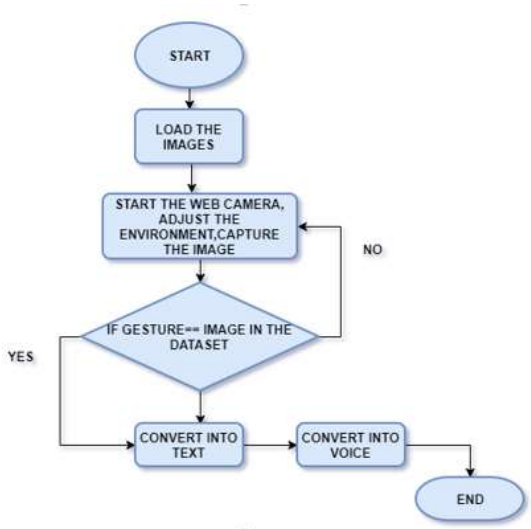
Deaf and dumb people uses gesture based communication to communicate with the world using hand gestures. Sign language is the only single way of communication for deaf and dumb people. But common people face difficulty in understanding the gesture language therefore often these physically challenged people has too keep the translator with them to communicate with the world.

SCOPE of Project

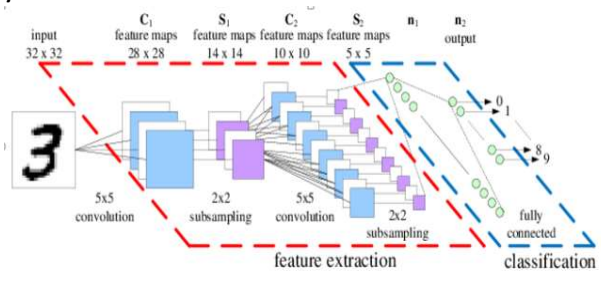
The scope of our project is to enhance the livelihood of deaf and dumb. Our prototype provides the best frameworks in which the CNN model works. The prototype would capture custom images which would be further get converted into text and voice accordingly.

Methodology

The technical specifications in our project involves:
Python, Open CV, NumPy, Tensor Flow, Keras ,Anaconda Jupyter which provides the best platform .
So the entire project is carried on using CNN model which helps in capturing the custom images. The dataset is updated every time a new image is captured, thus letting us make our own dataset.
We take a custom input image which is matched to the existing dataset and once a match is obtained it gets further converted into words which also gets converted into voice. Thus making it effective enough to carry on the communication.



The model used is CNN thus involving steps:
1.Convolution
2.Sub-sampling
3. Activation
4. Fully Connectedness.

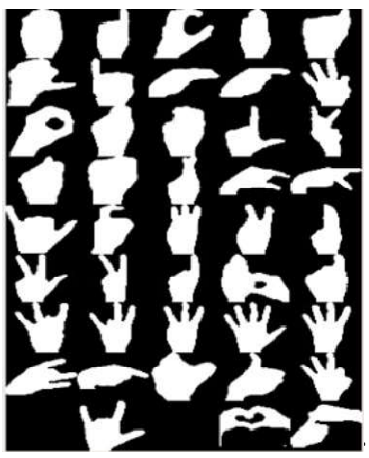


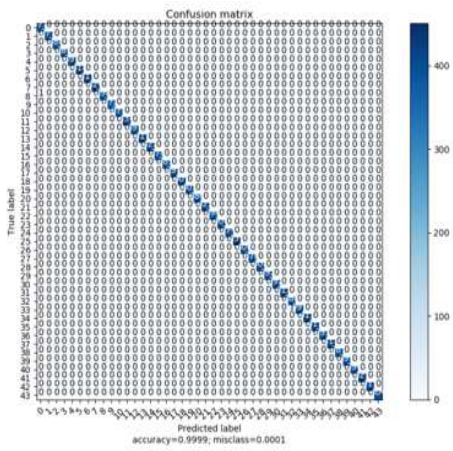
Results

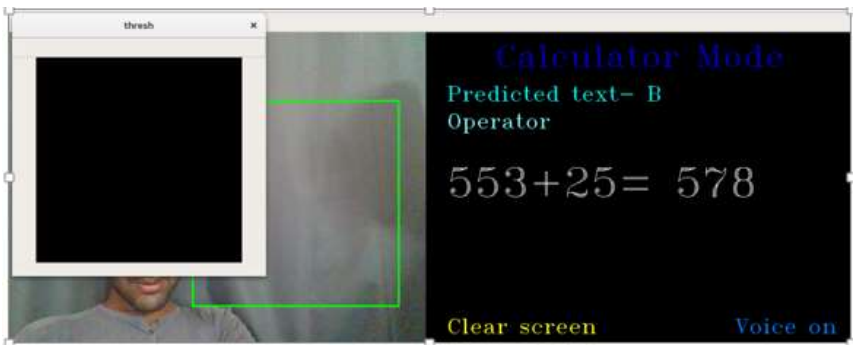
The project was tested successfully

System converts the Gesture into Text and Voice

System helps deaf and dumb people to establish an effective communication







Conclusion/Summary

So, our project is basically smart aid for speech and hearing impaired community which would be quite beneficial for the deaf and dumb as well as common people. The alphabets would be used for the formation of text and the digits would be used for the mathematical operations. Each letter is captured one by one thus forming texts and then voice accordingly

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Acknowledgement/References

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