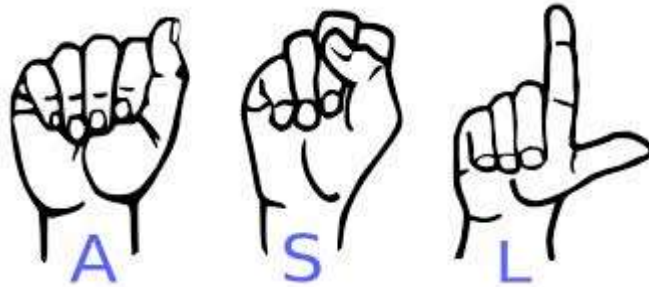


TECHNOCOLABS DATA SCIENCE INTERNSHIP

PROJECT REPORT

TITLE: ASL Recognition with Data Science and Machine Learning



AIM:

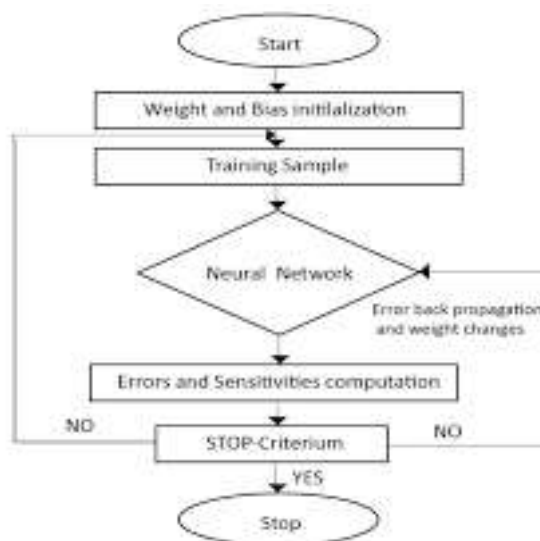
The principle focus of our project is to perform data science and train a model using the most popular Machine Learning algorithm – Convolutional neural network to classify image of letters from American Sign Language.

ABSTRACT:

The system was implemented and tested using a data set of 3000 samples of hand sign images; 1000 images for each sign. Experiments revealed that our system was able to recognize selected ASL signs with an accuracy of 92.3%.

Keywords:

Sign language, RGB, gestures, deep convolutional neural network



INTRODUCTION:

American Sign Language (ASL) is the primary language used by many deaf individuals in North America, and it is also used by hard-of-hearing and hearing individuals. The language is as rich as spoken languages and employs signs made with the hand, along with facial gestures and bodily postures.

In this project, you will train a convolutional neural network to classify images of ASL letters. After loading, examining, and pre-processing the data, you will train the network and test its performance.

OVERVIEW:

- Data Loading and Data Cleaning
- Define and run the model
- Visualize mistakes

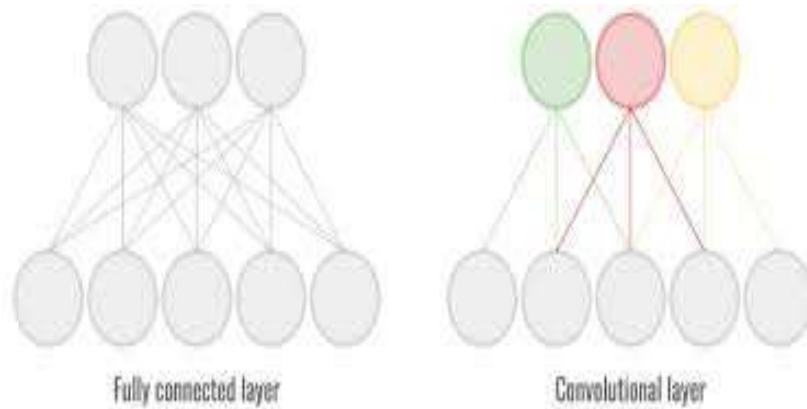
About Data:

The dataset can be accessed from dataset. The training dataset contains 3000 images and 100 columns, while the test dataset contains 3000 images and 100 columns. The first column of the dataset contains the label of the image while the rest of the 100 columns represent a flattened 3000 image.



Define and run the model:

- This network accepts an image of an American Sign Language letter as input. The output layer returns the network's predicted probabilities that the image belongs in each category.
- The input layer of the model will take 3000 images Where 100 are height and width of the image respectively while 1 represents the colour channel of the image for grayscale. The model consists of seven layers



Visualize mistakes:

- The trained model should be evaluated on the test data set in order to measure the performance of our model.
- To check how many images were accurately classified by the model, we can plot a confusion matrix and look at how many images were properly classified and how many were misclassified by the model.

Reference:

You can find the complete project along with Jupiter notebooks for different models in the GitHub repo:

<https://github.com/Shafali3012/Technocolabs-Data-Science-Internship/tree/master/Final%20Project>