

# Sign Language Interpreter

SDPD project



17

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## **Declaration :**

**Title :** Sign Language interpreter

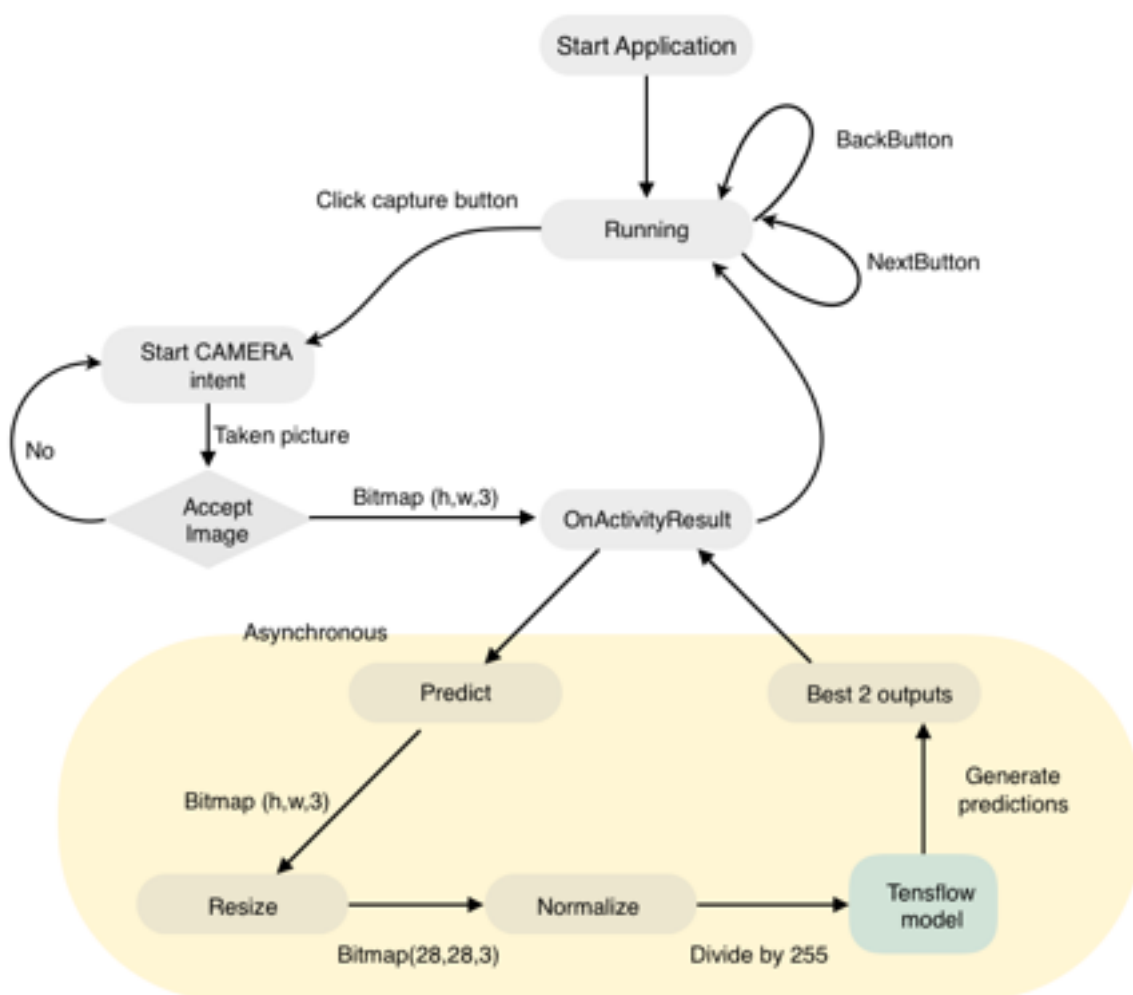
**Project ID :** 17

**Objective :** Create an application that takes input image from mobile camera intent to recognise a subset of the American sign language that includes all the alphabets excluding 'J' and 'Z'.

**Team :**

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## **Architecture diagram and Data Flow :**



## **Hardware and Software Prerequisites :**

**Hardware :** Android device with a camera, desktop/laptop with keras

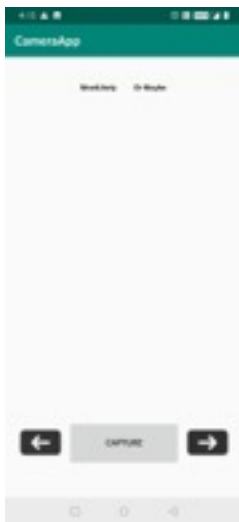
**Software :** Android studio with SDK and NDK, TensorFlow lite

**Post-Midsem progress:** Earlier version of application did not have the keras model to predict the character. A frozen graph with already trained neurone written in tensor-flow is deployed in the application with TensorFlow lite.

Also the prior version could store only 3 images, which also had few bugs. The newer version can store as many number of images user wants, and go back or next to glance past predictions.

### Usage of application:

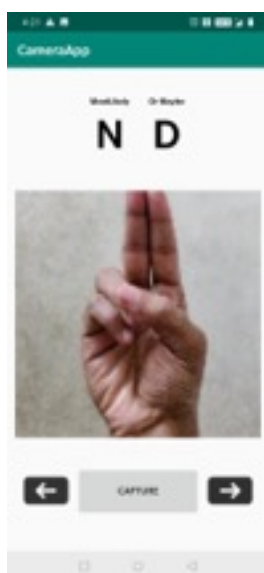
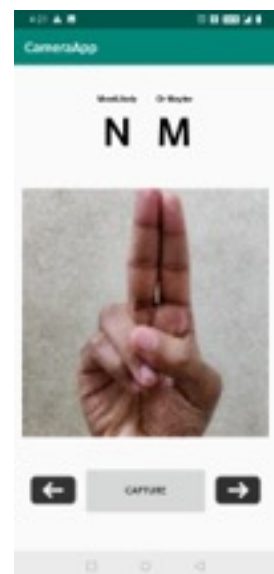
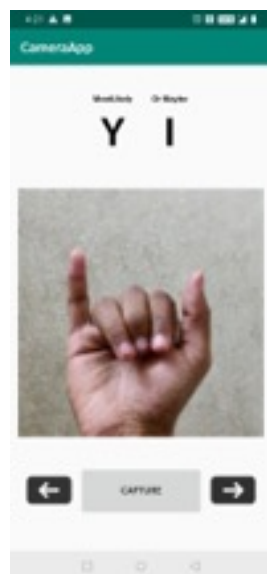
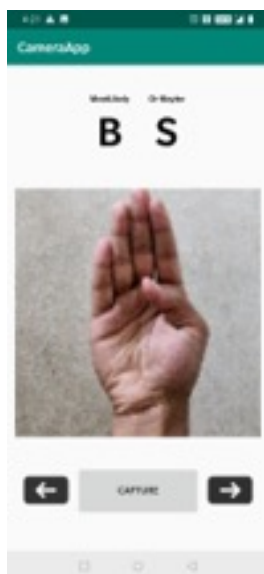
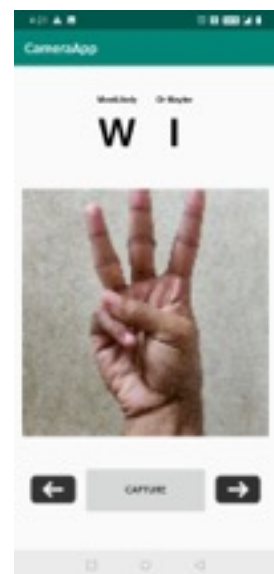
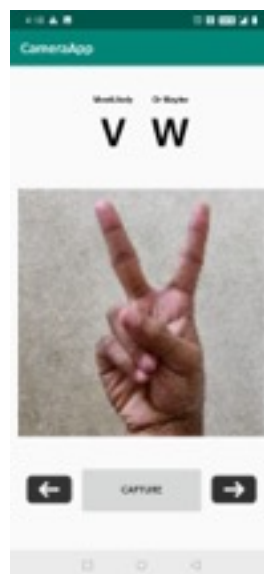
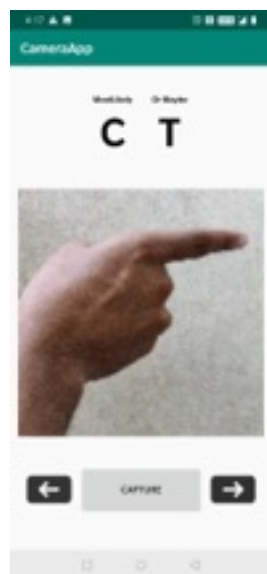
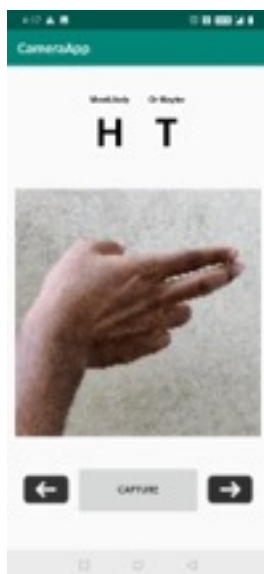
**OnStart :** Click CAPTURE button to start taking photos.



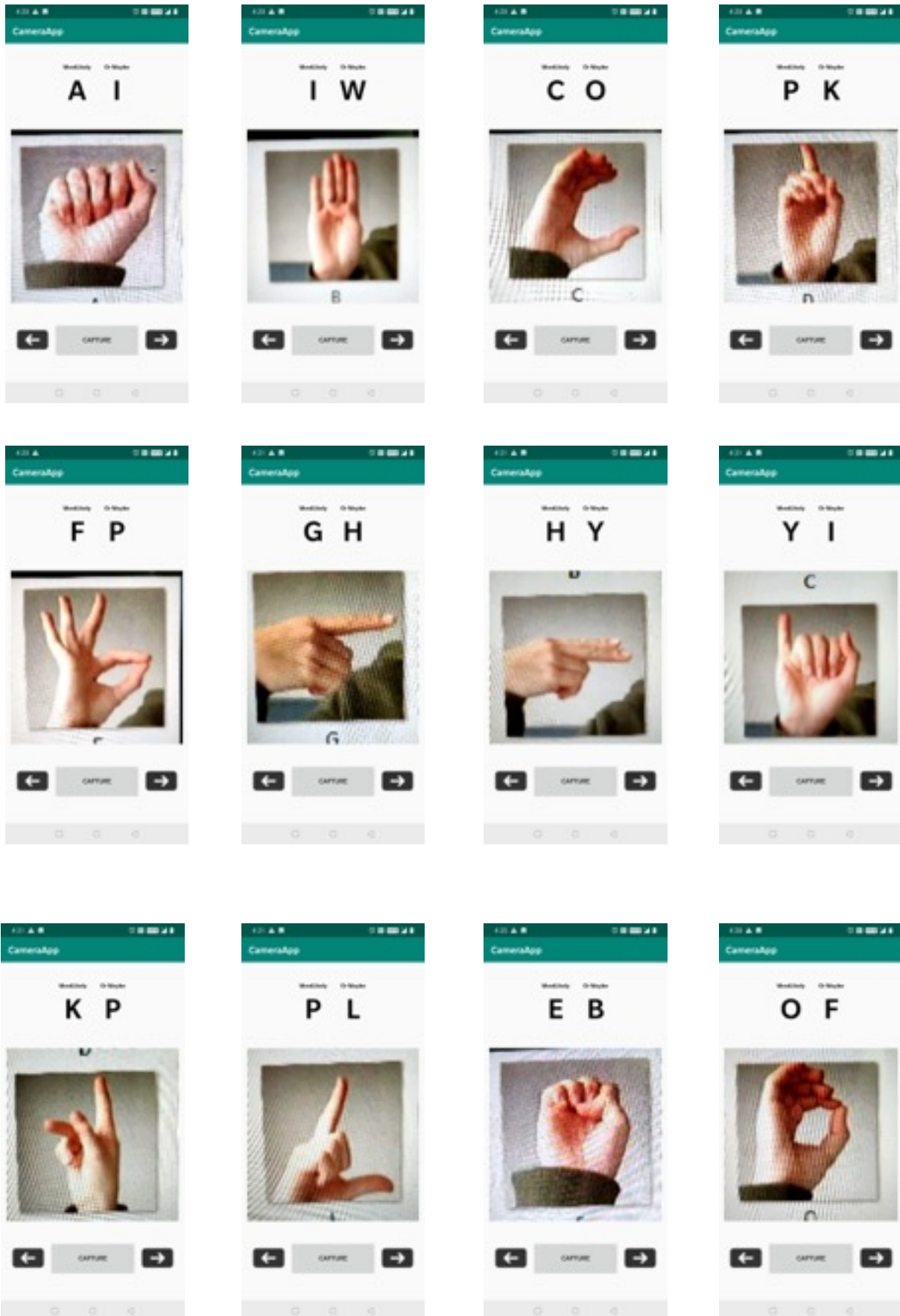
**On Click CAPTURE :** Accept, retake image or close camera after taking the image



Some predictions made on human hands:



## Some predictions made on picture of digital image (Kaggle MNIST)



**Results :**

Predictions on human hand had an accuracy of 55%, i.e., 11 out of 20 gave a correct prediction. While the prediction on the MNIST data is 75%, i.e. 15 out of 20 predictions were correct.

**Source code :**

<https://drive.google.com/drive/folders/189Ix6ZegtAGjuhw2nQiw4MyC09sO1XPn?usp=sharing>

**Unfinished tasks :**

The sign language dataset has alphabets which looks almost same, like A, E, M, N and S, all are closed fist but the fingers are slightly placed in different order. To correctly classify the alphabets, high precision images need to be taken. But in this application, the keras model is trained on 28 x 28 input data. The image size can be increased to improve accuracy of classification. Few image preprocessing is also likely to improve the results.