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# Vigilate

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# PROBLEM STATEMENT

Driver behaviour detecting app that
warns if the behaviour is detrimental

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# WHY THIS APP MATTERS?

According Insurance Information Institute, the total number of crashes due to distractions in the year of 2016 is 34,439 .

## HOW WE BUILT IT

# Open CV for android and tensorflow lite

# VIGILATE IN A NUTSHELL

The app starts of with the camera running and it looks for the eyes in the video

It then looks for any distracting behaviour shown by the driver

If the behaviour is detected to be bad it warns the driver

The alert runs till the driver touches the screen and if it takes too long an sos is sent to his emergency contact number

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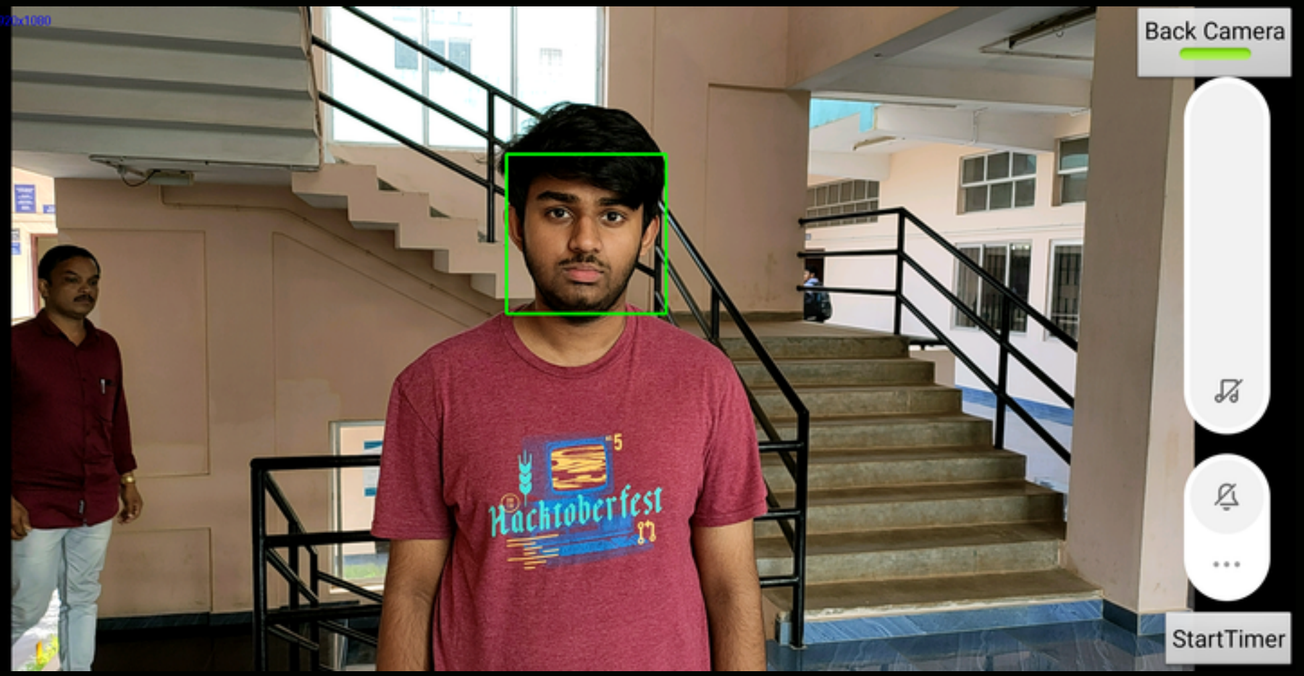
# The Drowsiness Detector

The drowsiness detector runs on openCV for android and calculate the the euclidean distance between the coordinate point to detect if it is closed or open.




Closed
ALERT!
Back Camera
StartTimer

# ALERT SYSTEM:

THE ALERT SYSTEM RUNS IN TWO DIFFERENT WAYS.
1).ONE IS TO ALERT THE USER BY BLINKING THE SCREEN RED.

2).THE OTHER IS TO USE THE REAR FLASH TO MAKE THE NEARBY VEHICLES AWARE THAT THE PERSON IS QUITE DISTRACTED OR DROWSY. THIS WORKS FOR THE DISTRACTION MODEL AS WELL.

# THE DISTRACTION DETECTION MODEL

## THE CLASSIFICATION MODEL WAS TRAINED ON THE STATE FARM DATASET WHICH INCLUDE 9 CLASSES:

c0: safe driving
c1: texting - right
c2: talking on the phone - right
c3: texting - left
c4: talking on the phone - left
c5: operating the radio
c6: drinking
c7: reaching behind
c8: hair and makeup
c9: talking to passenger

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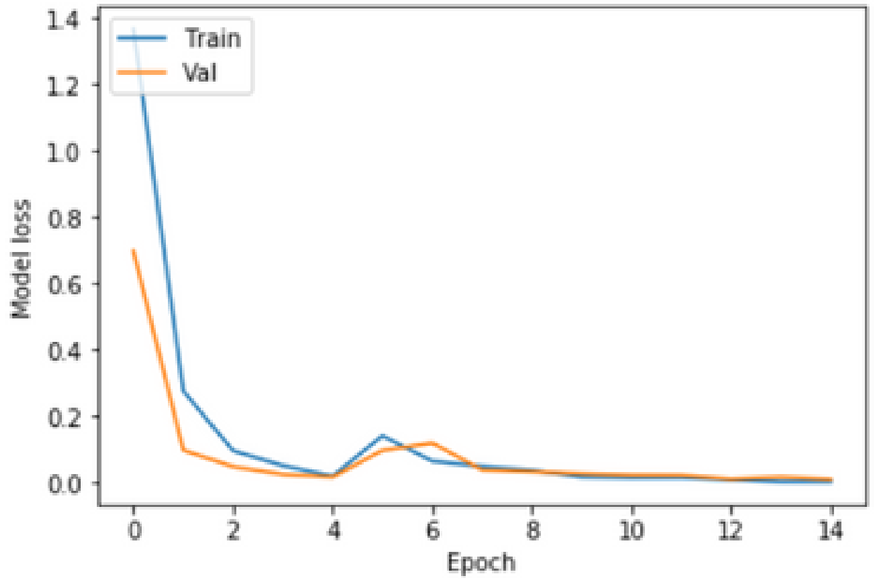
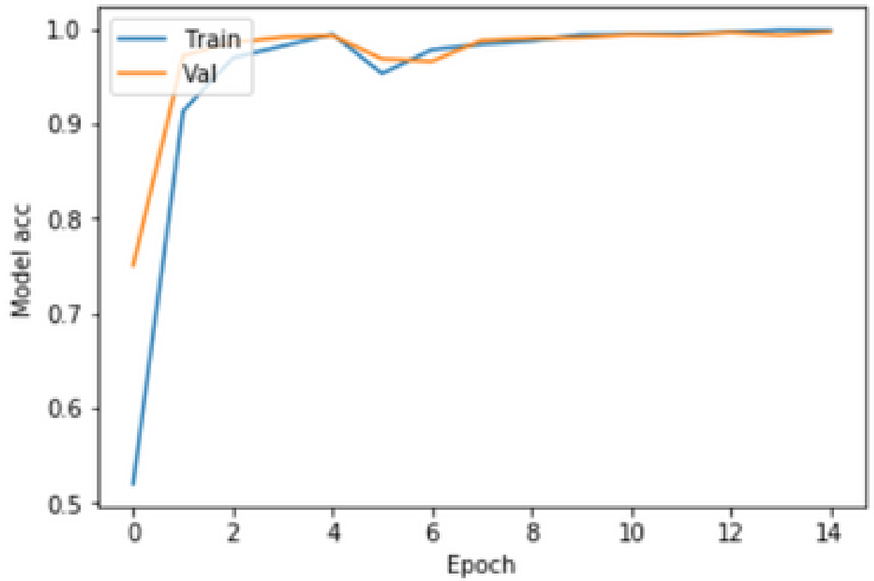
# THE TENSORFLOW MODEL:

The model was trained on a data set provided by state farm on kaggle.
The classification model was trained using a rate scheduler made made by jeremy jordan.
. It lets you choose a learning rate range to work between and decreases over a set number of epochs. Once it reaches the minimum learning rate it does one last epoch, followed directly by the max learning rate. This decrease in learning rate over epochs starts slowly and then increases at the rate of the cosine function. This process repeats as many times as one likes, potentially over different numbers of epochs.

```
14351/14351 [==============================] - 255s 18ms/step - loss: 0.0039 - acc: 0.9987 - val_loss: 0.0
117 - val_acc: 0.9969
```



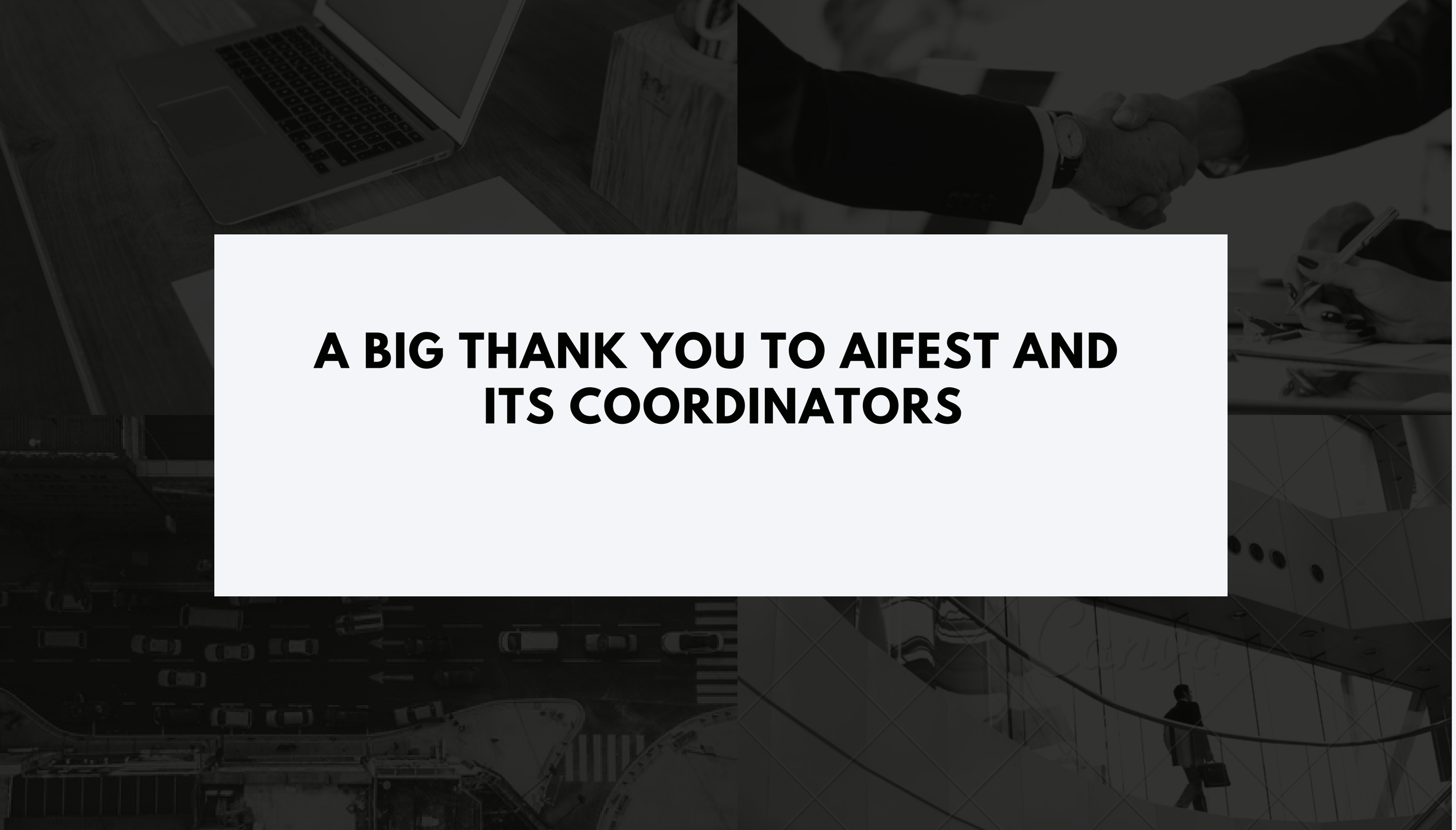



# FUTURE PLANS

- To make the tensorflow model accesible to the alert activity.
- To use Deep Pose to detect movement and act accordingly
- Sos alert to work on time interval basis.
- To make this a business facing model as well especially to insurance agencies


# CHALLENGES WE FACED TODAY:

- TRAINING THE MODELS ON THE CLOUD AND CONVERTING THEM INTO A INFERENCE MODEL THAT CAN RUN LOCALLY ON THE MOBILE.
- USING OPENCV FOR ANDROID TO TRACK THE EYE COORDINATES AND EUCLIDIAN DISTANCE.
- RUNNING THE GRADLE SCRIPTS.#ANDROIDSTUDIOPROBLEMS



# A BIG THANK YOU TO AIFEST AND ITS COORDINATORS