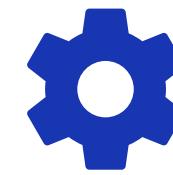


DRIVER DROWSINESS DETECTION

USING CONVOLUTIONAL NEURAL NETWORK (CNN)



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Introduction:

Driver drowsiness detection is a car safety technology which helps prevent accidents caused by the driver getting drowsy.

Problem Statement:

- Accidents due to drivers getting drowsy or sleepy account for around 20% of all accidents
- The project uses a CNN model to predict whether a person feels drowsy or not based on whether the eyes are closed or open or the person is yawning or not.



Dataset Description:

DATASET FROM KAGGLE.

2900 IMAGES IN FOUR CATEGORIES.

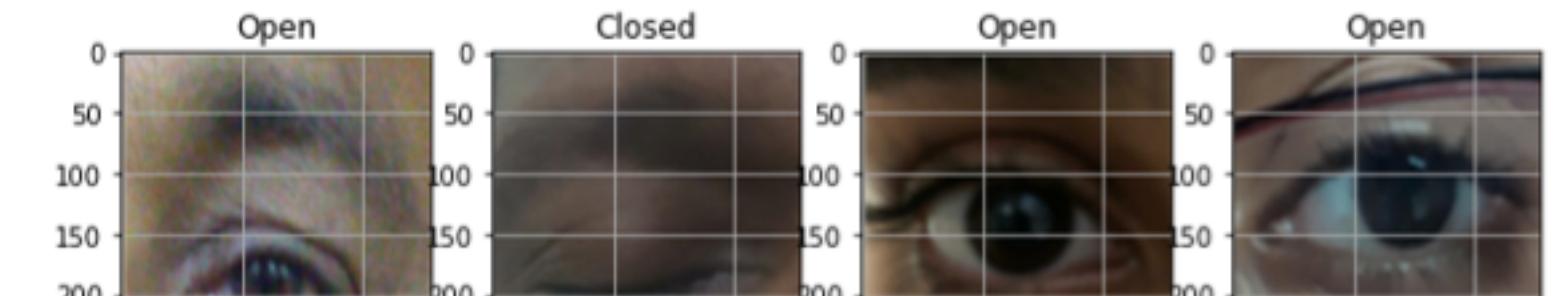
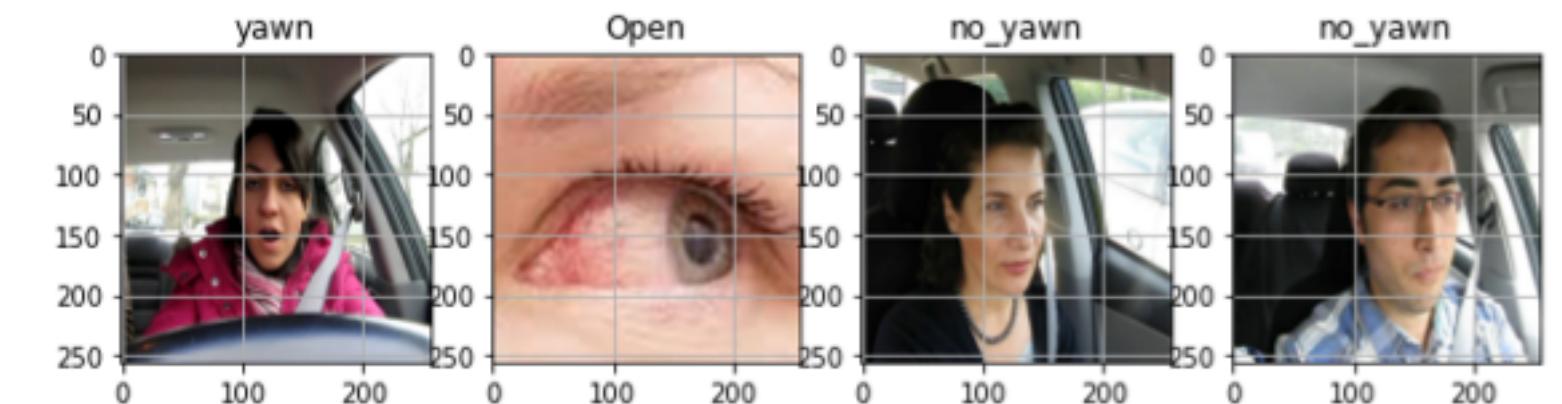
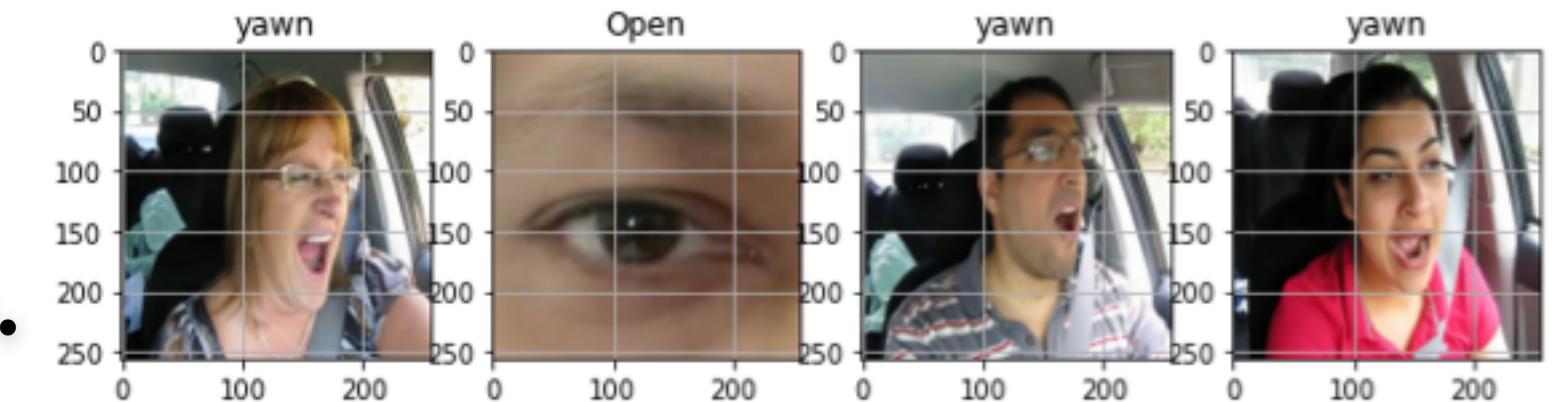
1-YAWNING (0)

2-NOT YAWNING (1)

3-CLOSED EYE (2)

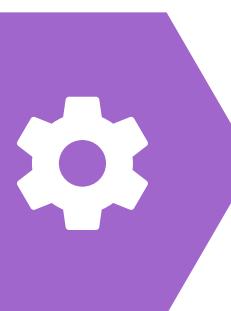
4-OPEN EYE (3)

Some examples of images of the dataset





Data Pre-processing



Detect the eyes and mouth



Assign an index for each class



Label binarize



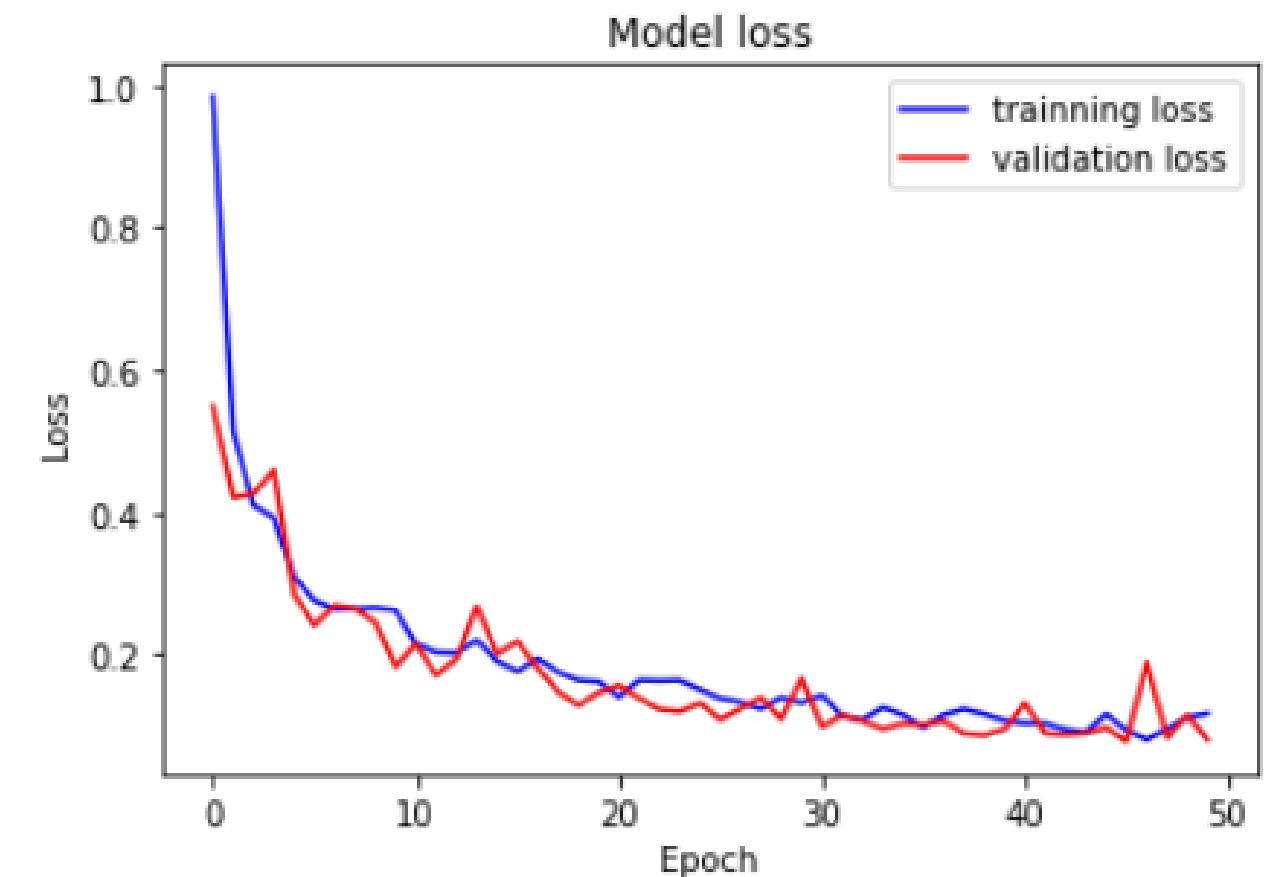
Data augmentation

Modeling

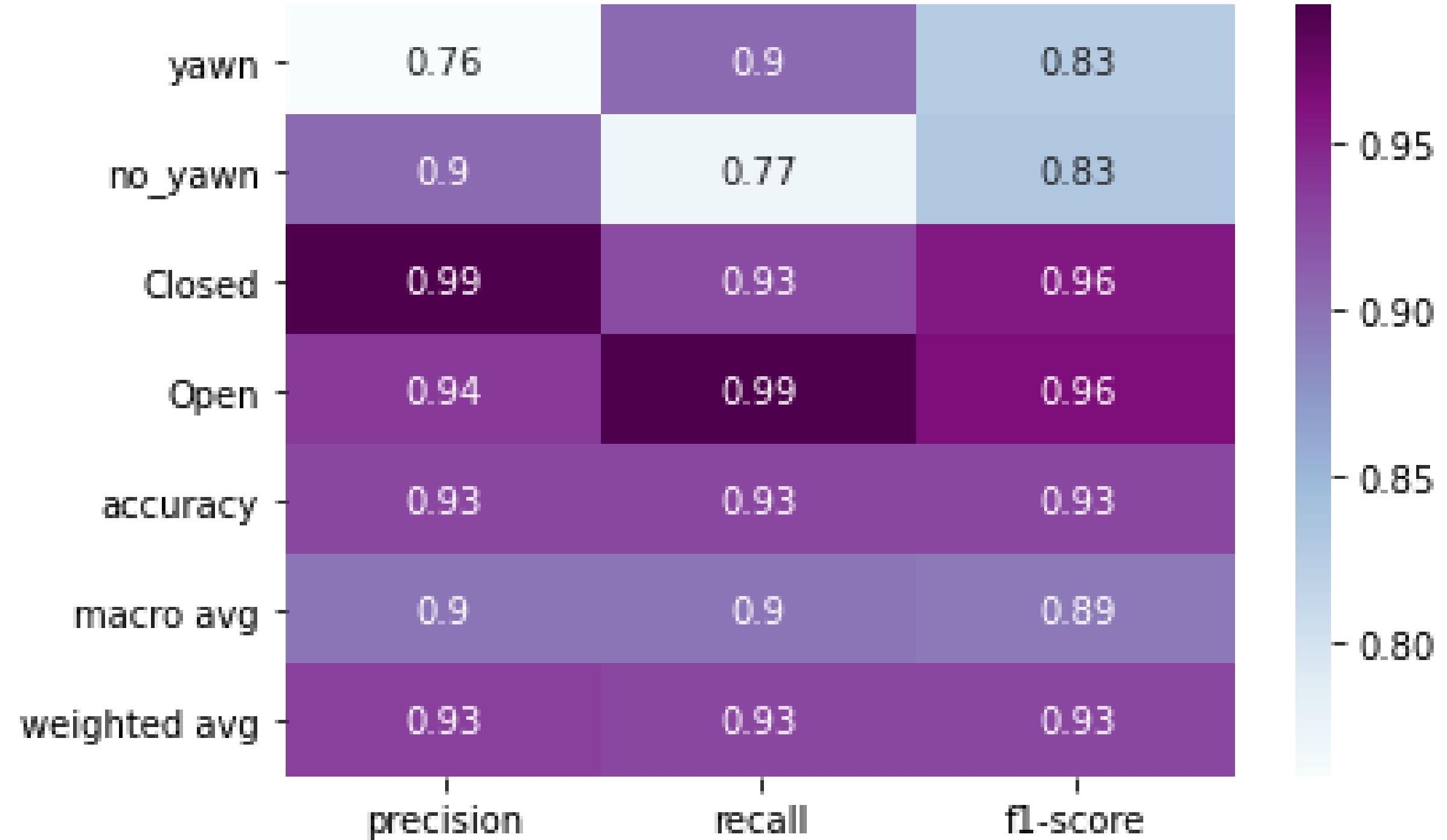
CNN Building:

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- 4 Convolutional layers with Max Pooling.
- Adam optimizer were used.
- Relu activation function with Accuracy of 97%

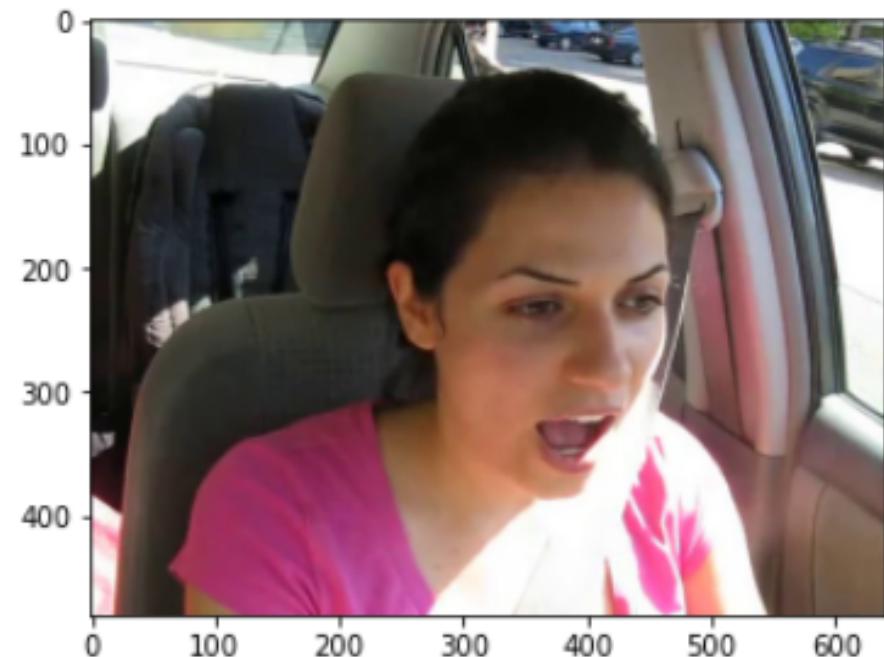


Classification Result:

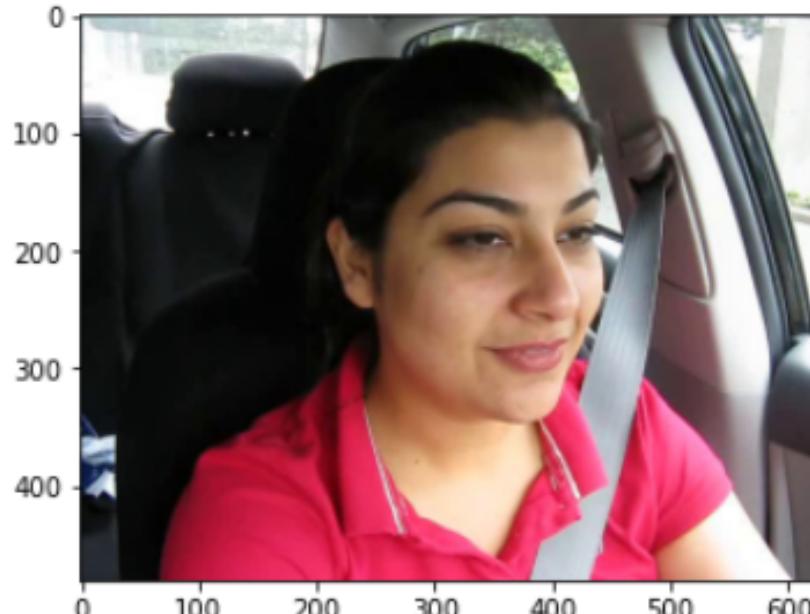


Model Deployment :

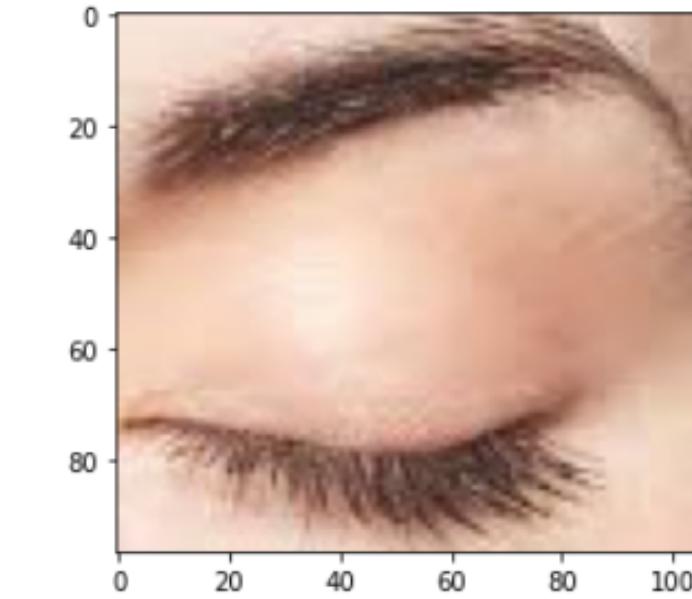
The Predicted label 0 indicates yawn



The Predicted label 1 indicates not yawning



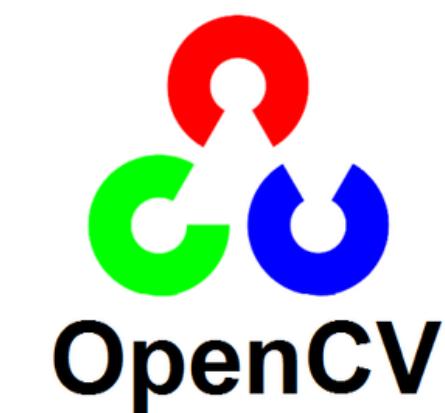
The Predicted label 2 indicates closed



The Predicted label 3 indicates Open



Tools

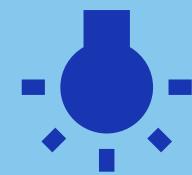




Future work



Improve the model by create an IOT can detect when driver sleep



Improve the model to give alert by seat vibration and light on face



Automatically car will change to self-drive car and take the nearest save parking

Thank you!

Feel free to approach us if you have any questions.

Presented by:

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