

DRIVER DROWSINESS DETECTION MINI REPORT 2

BASU VERMA
(142002007)

under the guidance of

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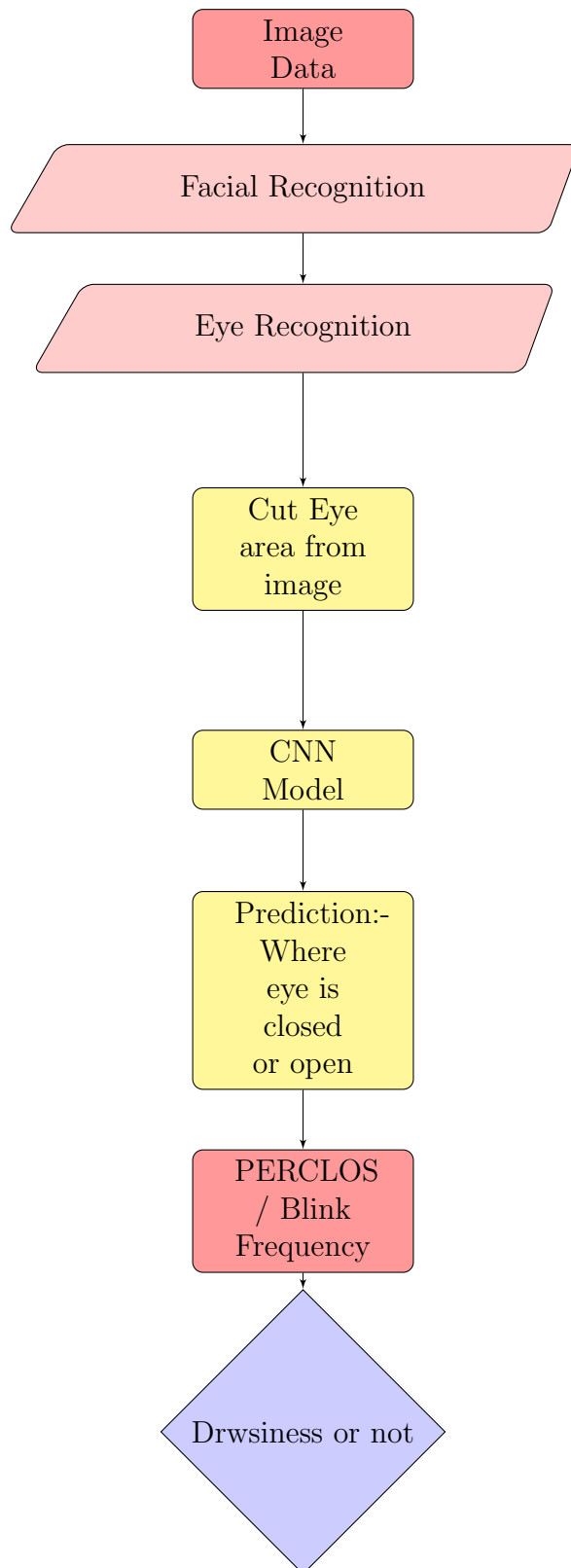
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Part. 1

Methodology

1.1 Pipeline



1.2 Eye Dataset for CNN model

MRL Eyedataset[1]

This dataset contains infrared images in low and high resolution, all captured in various lightning conditions and by different devices. The dataset is suitable for testing several features or trainable classifiers. In order to simplify the comparison of algorithms, the images are divided into several categories, which also makes them suitable for training and testing classifiers.

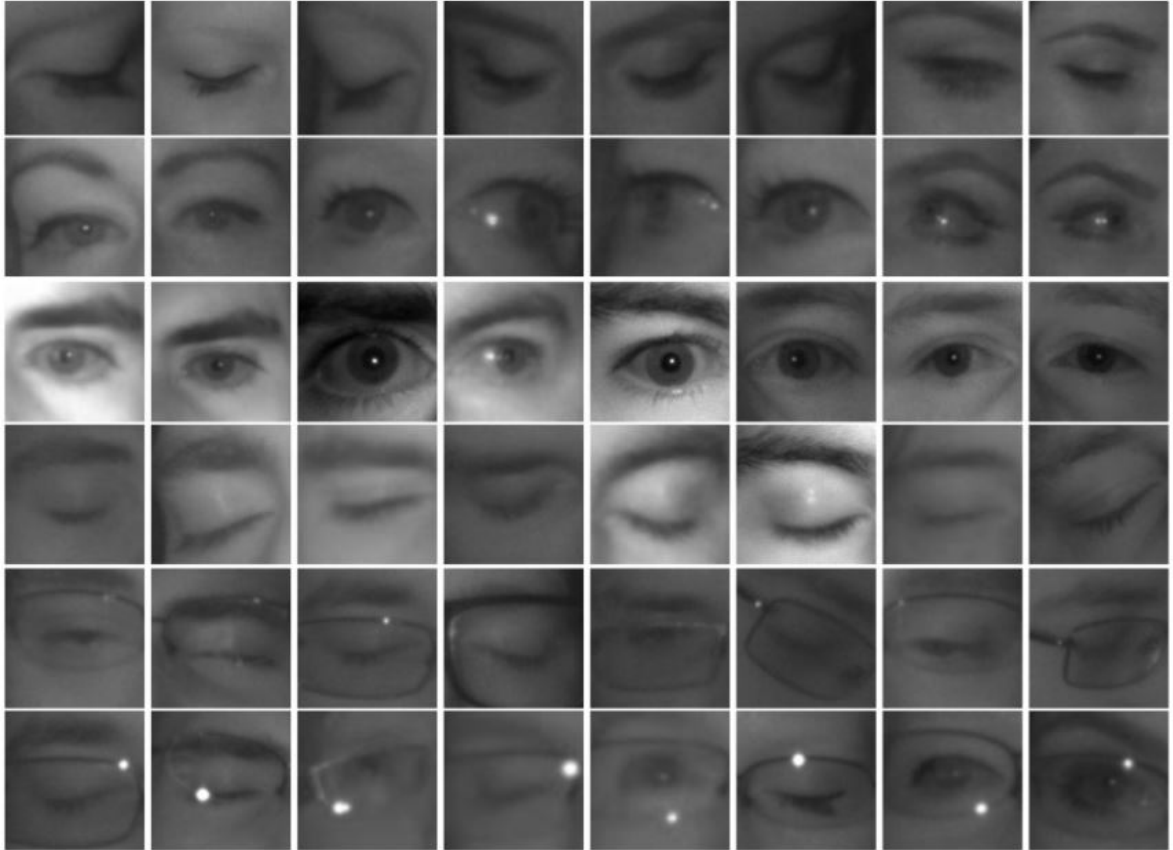


Fig. 1.1 MRL eyedataset

Example of eye detection[1]



Fig. 1.2 EYE detection example

1.3 CNN Model

Using the above dataset, I trained a CNN Model. I have used MobileNet pretrained model for training and predicting.

A pre-trained model is a saved network that was previously trained on a large dataset, typically on a large-scale image-classification task.

The intuition behind transfer learning for image classification is that if a model is trained on a large and general enough dataset, this model will effectively serve as a generic model of the visual world. We can then take advantage of these learned feature maps without having to start from scratch by training a large model on a large dataset.

We do not need to (re)train the entire model. The base convolutional network already contains features that are generically useful for classifying pictures. However, the final, classification part of the pretrained model is specific to the original classification task, and subsequently specific to the set of classes on which the model was trained.

MobileNet pretrained model is pretrained on ImageNet dataset containing 1000 classes of images with input size of (224 x 224 x 3).

Total params: 4,253,864

Total trainable params: 4,231,976

I removed the top layer from MobileNet pretrained model and added 1 Flatten layer, 1 Dense layer and 1 output layer with only 1 node for binary classification.

Total parameter is: 3,261,697

Total trainable parameter is: 32,833



Fig. 1.3 CNN Model output

References

- [1] “Mrl eyedataset.” [Online]. Available: <http://mrl.cs.vsb.cz/eyedataset>