Driver Drowsiness Detection with Deep Learning

By:
Sultanah aldossari
Rawan Alharbi

Objectives Outline:

- Introduction
- Problem Statement

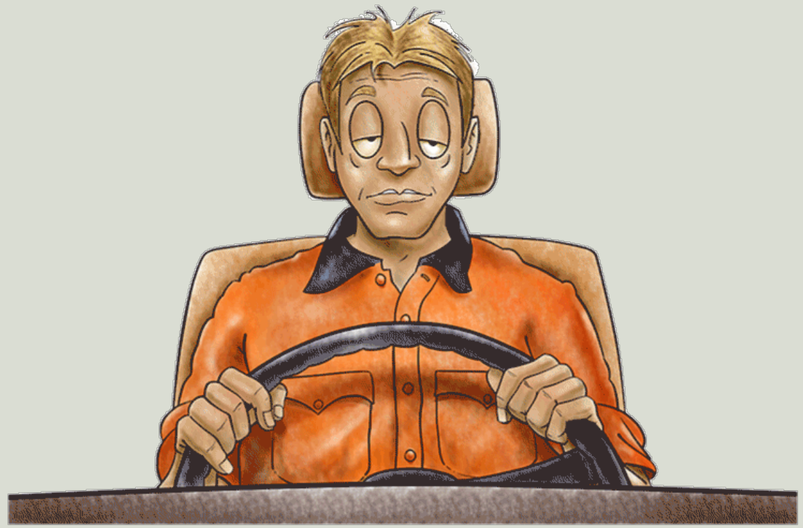
- Drowsiness Detection Dataset
- Data Preprocessing

- Model Building
- Model Performance

- Conclusion
- Future Work

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.

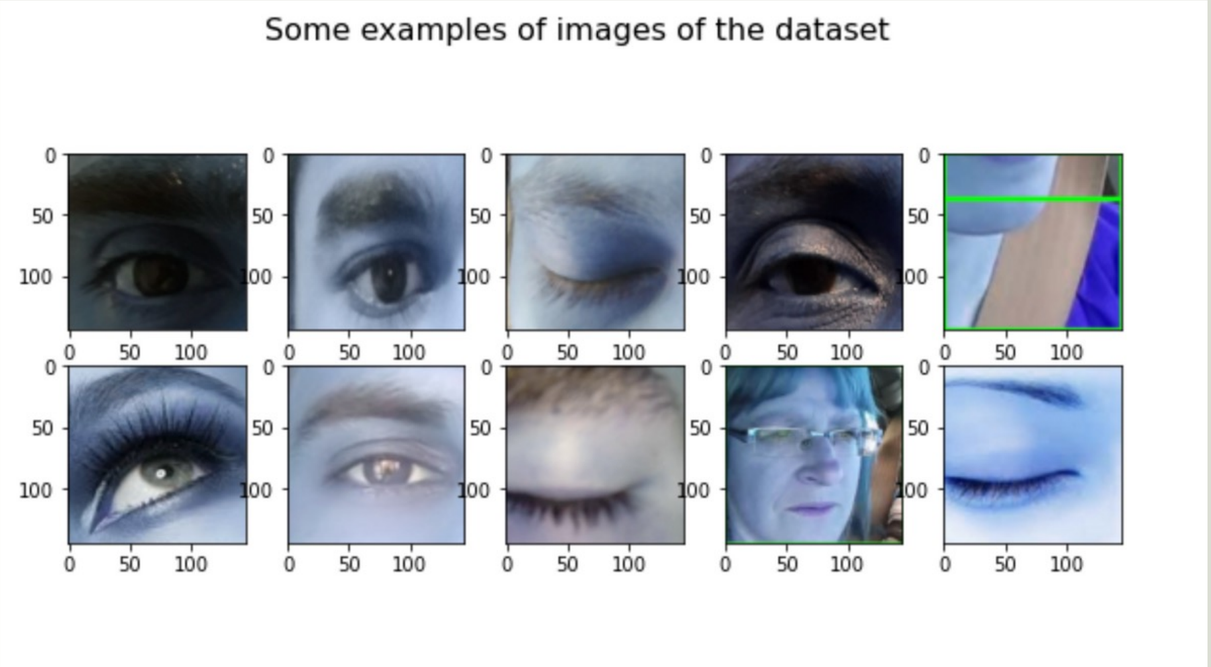


Dataset Description

- The project uses the Drowsiness dataset present on the Kaggle.
- The dataset contains a total of 4799 images in four categories.
- Class Labels — ‘Open Eye’, ‘Closed Eye’, ‘Yawning’ and ‘Not yawning’,
- Class Labels were encoded such that 0 represents Yawning and 1 illustrates Not yawning, 2 illustrates Closed Eye and 3 represents Open Eye.

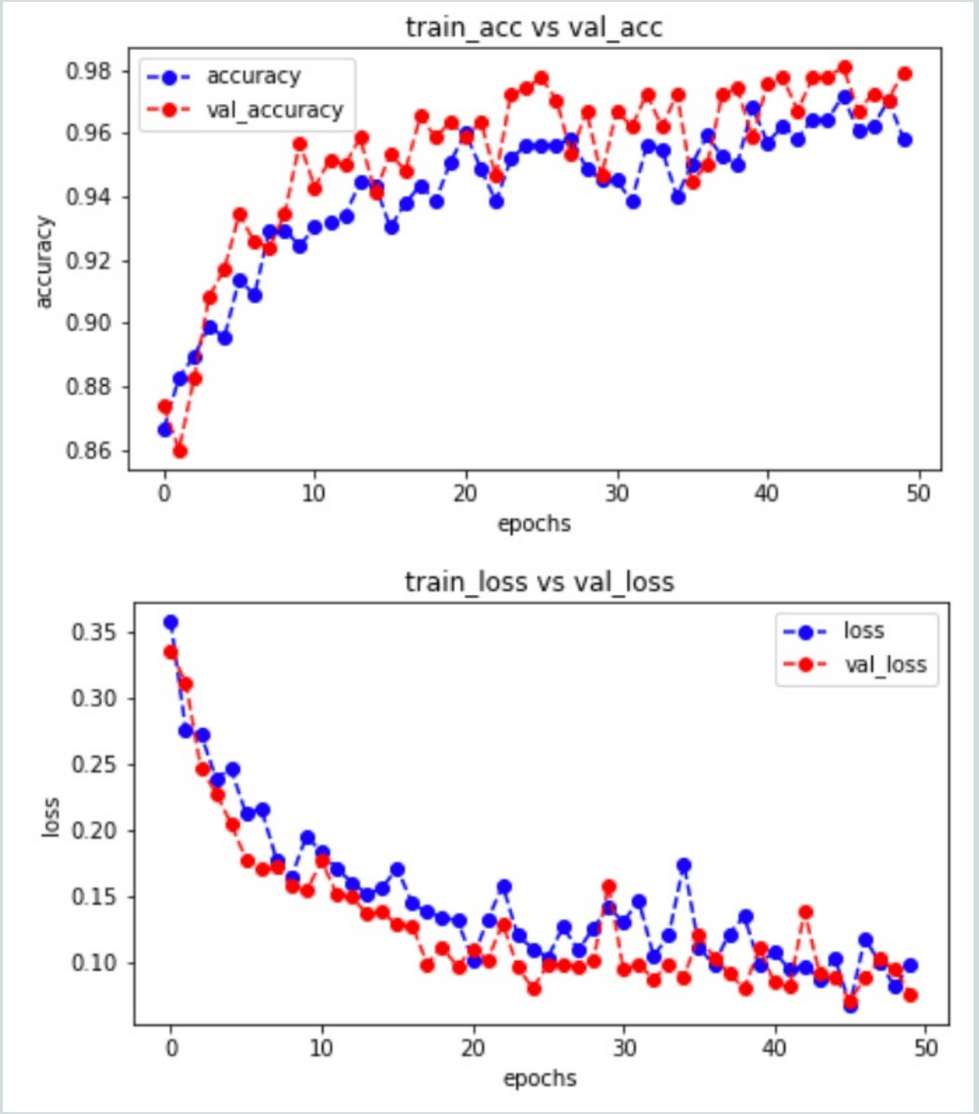
Data Pre-processing

- Detect the eyes and mouth
- Assign an index for each class
- Label binarize
- Data augmentation

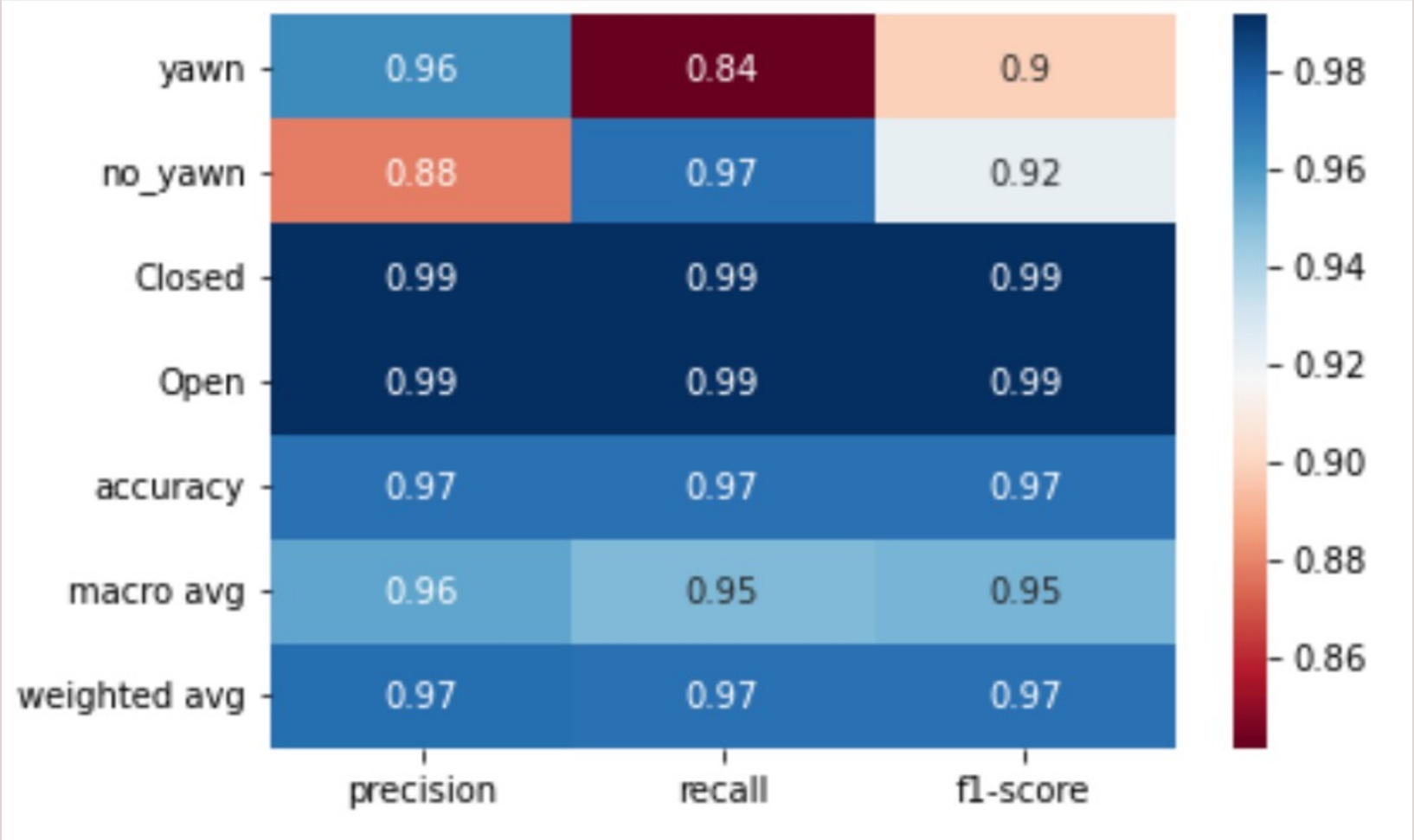


CNN Building

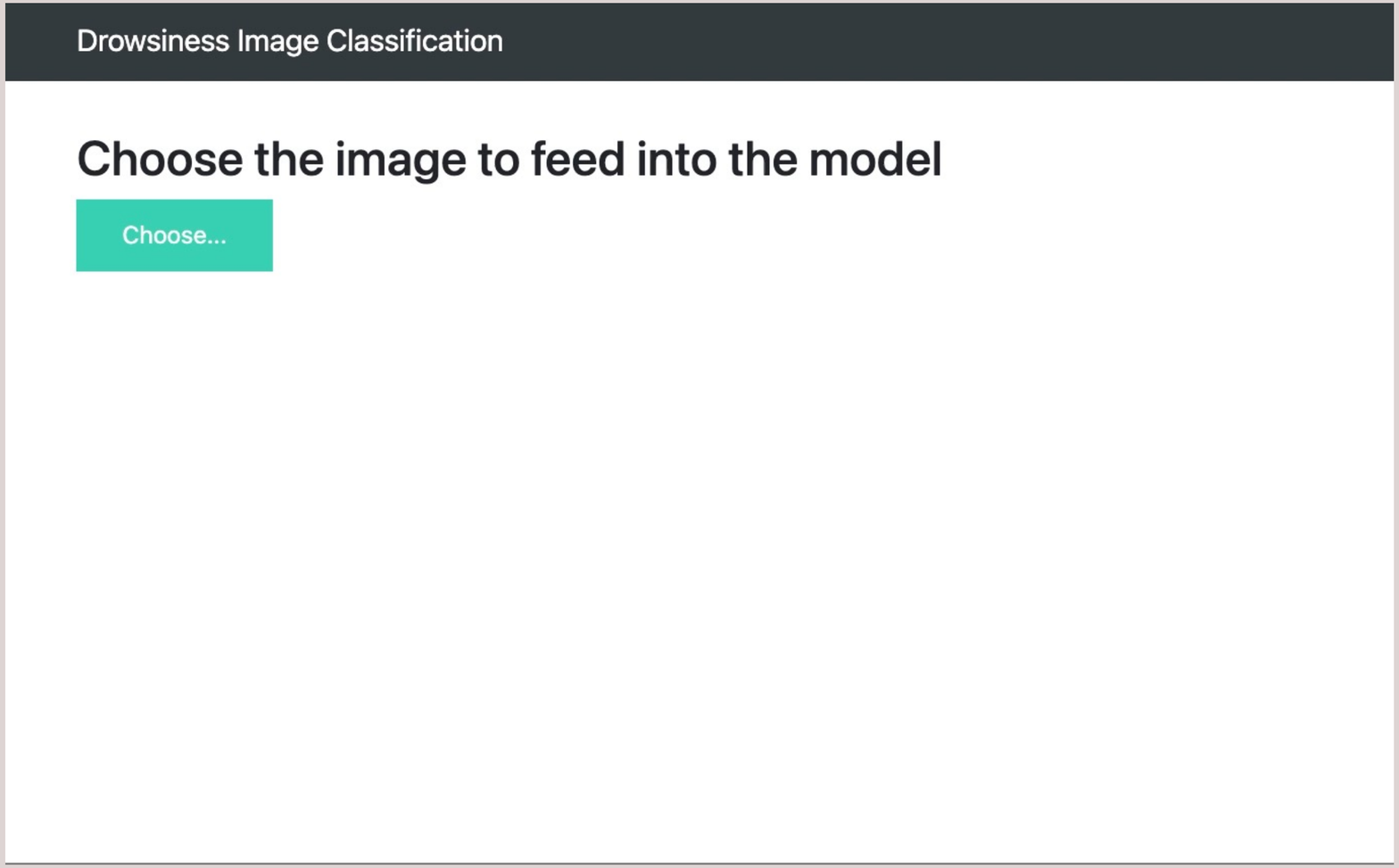
- 4 Convolutional layers with Max Pooling
- Adam optimizer were used
- LeakyRelu activation function with Accuracy of 97% and MSE Score 0.07



Classification Result



Model Deployment



Future work

Create an IoT product that can detect the drowsiness

Improve the model to detect real-time photos immediately from the camera


THANK YOU

Congratulations
our fellows Data Scientists

We will always be T5C05