Driver Drowsiness Detection

Modhi Alhbrdi	Abdullah Alhuwaishel	Abdalla Alnujaidy
modhi.alhbrdi@outlook.com	ahuwaishel@gmail.com	a.alnujaidy@gmail.com

Abstract:

The final project of the Data Science Bootcamp T5 is Driver Drowsiness Detection model using deep learning Convolutional Neural Networks.

Since 2030 Vision expecting a huge increasing in the capital, Riyadh population and the life quality of the residents is one of its priorities. The project here is in the daily needs for transportation and how driving behavior effects the public safety from traffic accidents. Which The world health organization called it the epidemic of civilized societies. The project will establish a deep learning model, which will detect face expression of the driver, when the driver's fatigue is detected, a module issues an alarm, so the driver gets back awareness to prevent any accidents that threats the driver and the public safety.

Design:

Dataset:

The used dataset in this project from a public source, Kaggle. Contains 1400 images of open and closed eyes.
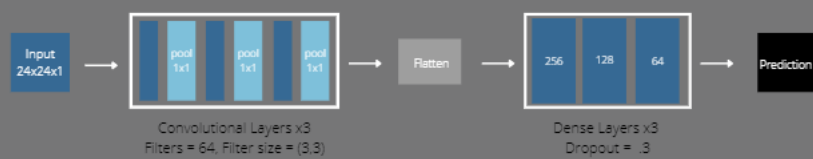
Methodology:

Tools:

Technologies:
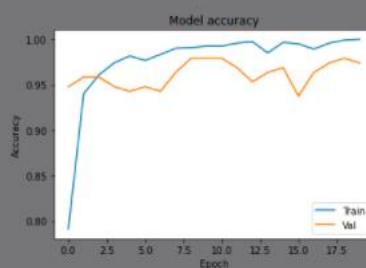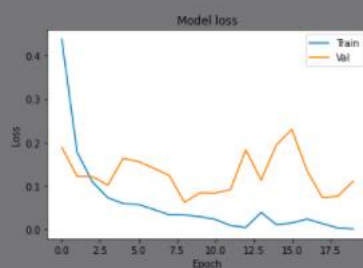- Python, Jupyter Notebook.

Libraries:
- Pandas, Numpy, Matplotlib, Seaborn, Sklearn and Keras

Communication:

CNN MODELING

Input 24x24x1 → Convolutional Layers x3 (pool 1x1, pool 1x1, pool 1x1) → Flatten → Dense Layers x3 (256, 128, 64) → Prediction

Convolutional Layers x3
Filters = 64, Filter size = (3,3)

Dense Layers x3
Dropout = .3

CNN RESULTS

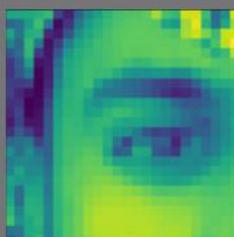Model loss — Train, Val

Model accuracy — Train, Val

Epoch = 20

IMAGE PROCESSING

TESTING RESULTS

Open   %97
Closed   %3

Open   %1
Closed   %99

Github:

Jupyter Notebook Here

Presentation Here