Driver Drowsiness Detection

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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:

First of all, we resized the images to 24*24, then we applied image augmentation to generate more images in order to have higher accuracy. After that we use a deep learning model called Convolutional Neural Network (CNN). Moreover, the model runs 20 epochs, 3 convolutional layers with Rello activation function, and 3 denes layers with Softmax activation function for final result.

Dataset:

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

Tools:

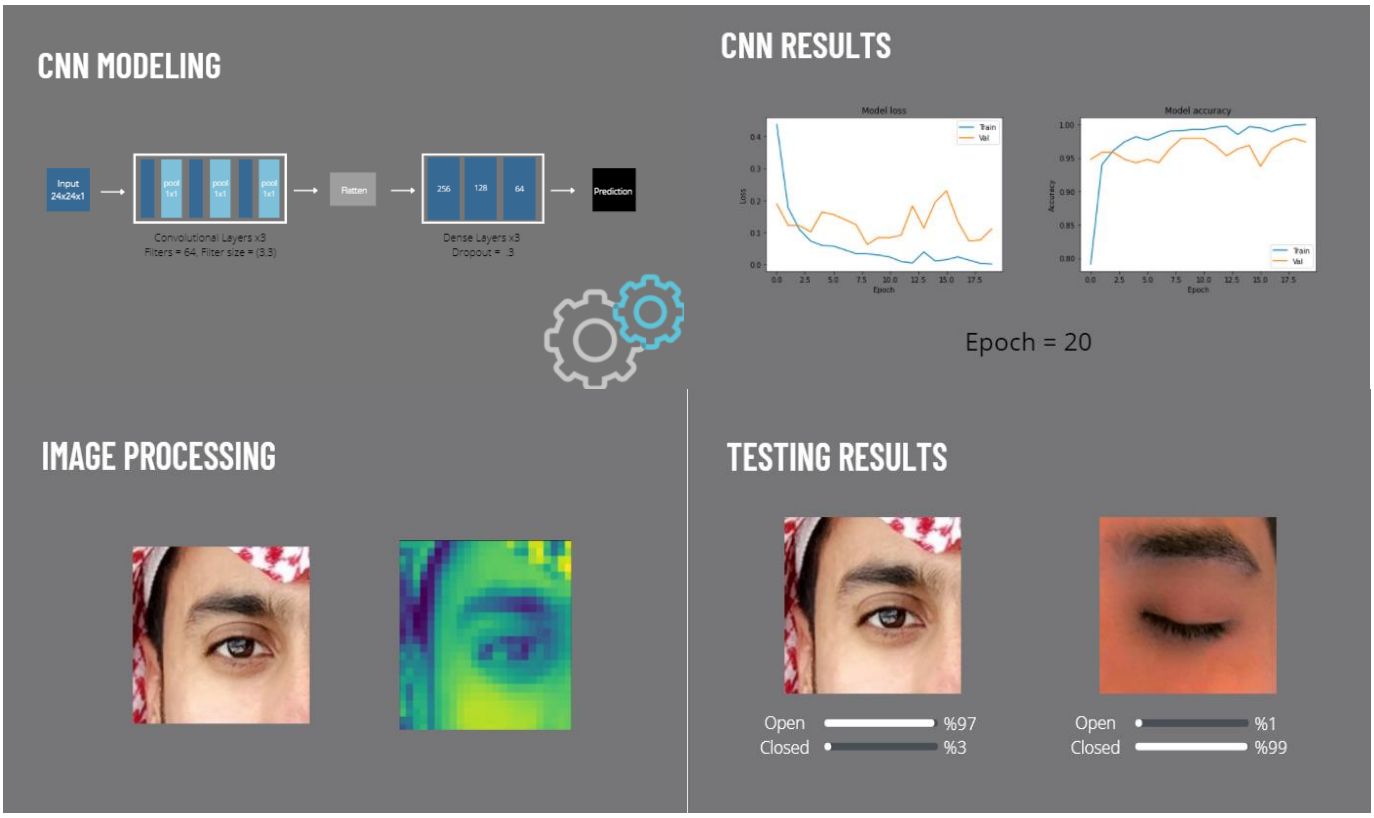
Technologies:

- Python, Jupyter Notebook.

Libraries:

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

Communication:



Github: Deep_learning

Presentation: Driver Drowsiness Detection presentation