Distracted Driver Detection

K Mani Kumar Reddy, K Sarath Chandra Reddy,

Problem Statement

- Road Accidents are increasing day by day. Driver Distraction is one of the main cause of road accidents. So, the detection of driver distraction is very important in today's scenario.
- The aim of our project is to build a model that detects the distraction of drivers in vehicles using various machine learning techniques with the help of dashboard cameras.
- Input to our model is an image of driver taken in a car while driving and model outputs a predicted type of distraction activity of the driver.

Dataset Description

- The dataset we will be using for this project is from Kaggle's challenge https://www.kaggle.com/c/state-farm-distracted- driver-detection/overview
- The Dataset contains 22,424 images categorized into 10 classes (9 classes of distraction and 1 class without distraction or safe driving). Each image size is 640 x 480 pixels.
    - Different classes:
- c0 - Safe driving
- c1 - Texting (right hand)
- c2 - Talking on the phone (right hand)
- c3 - Texting (left hand)
- c4 - Talking on the phone (left hand)
- c5 - Operating the radio
- c6 - Drinking
- c7 - Reaching behind
- c8 - Hair and makeup
- c9 - Talking to passenger(s)

Figure 1:Example Image Of Distracted Driver

Preprocessing Techniques

- Grey scale to RGB conversion (if any image is in
  Greyscale)
- Resizing
- Elimination of Noise (if any)
- Normalization or Standardization

Learning Techniques

- Neural Networks(Multi-Layered Perceptron's)

Evaluation Metrics

- Accuracy
- Multi Class Log Loss
- F1 score

References

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