Detecting Drowsiness in Automobile Drivers

Preventing Accidents by Identifying Behavior Associated with Drowsiness

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ABSTRACT

According to a poll taken by the CDC in 2009-2010, over 4% of drivers admitted to having fallen asleep while driving within the past 30 days (Wheaton et al., 2014). Furthermore, an estimated 16.5% of fatal accidents involve drowsy drivers (Tefft, 2012). Drivers falling asleep seems to be a pressing issue that needs to be addressed to mitigate further unnecessary loss of life. The goal of this project is to provide one potential solution to this pressing issue.

In this project, we will use machine learning image classification techniques (e.g. convolutional neural networks) to classify whether or not a driver is tired based on a real-time video feed of the driver’s facial expressions and head positions over time.

Our classifier model needs to be computationally conservative, so that it can be run on a small, cheap computer, like a Jetson Nano or Raspberry Pi 3/4. Future work may involve designing a casing to contain such a computer running our model, with an built-in alarm to wake drowsy drivers, and even potentially an built-in motion sensor to detect vehicle weaving, which could serve as another indicator of drowsiness.

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1 Insert Heading Level 1

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Figure 1: Figure Caption and Image above the caption [In draft mode, Image will not appear on the screen]

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1. In a Word 2010 document, insert a picture.
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1. In a Word 2013/2016 document, insert a picture.
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4. Expand **Alt Txt** option.
5. In the "Title:" and "Description:" text boxes, type the text you want to represent the picture, and then click "Close".

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