Project Proposal
Image Based Recognition and Classification
DD2427

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1 State Farm Distracted Driver Detection

According to the CDC motor vehicle safety division, one in five car accidents is caused by a distracted driver. Sadly, this translates to 425,000 people injured and 3,000 people killed by distracted driving every year.

Given a dataset of 2D dashboard camera images, State Farm is challenging Kagglers [1] to classify each driver's behavior. Are they driving attentively, wearing their seatbelt, or taking a selfie with their friends in the backseat?

2 Dataset

State frame provides a dataset that has been created in a controlled environment, so that for each driver we have several images for each of these classes.

- c0: safe driving
- c1: texting - right
- c2: talking on the phone - right
- c3: texting - left
- c4: talking on the phone - left
- c5: operating the radio
- c6: drinking
- c7: reaching behind
- c8: hair and makeup
- c9: talking to passenger

To ensure that this is a computer vision problem, metadata such as creation dates was removed from given images. The train and test data are split on the drivers, such that one driver can only appear on either train or test set.

3 Problems

What we will do is find the probability of an image being in one of the classes above. On Kaggle we can test our model error by submitting our solution and getting a multi-class logarithmic loss back [2]. Since the test data is not labeled, this is the only way of testing the model without changing the dataset.

Another option is breaking up the training set so 30% of the training set can be used for testing. The process of breaking up the training set has to be done carefully, because drivers can not be both in the training set and the test set.

References

[1]"Data - State Farm Distracted Driver Detection — Kaggle", Kaggle.com, 2016. [Online]. Available: https://www.kaggle.com/c/state-farm-distracted-driver-detection/data. [Accessed: 19- Apr- 2016].

[2]"Multi Class Log Loss — Kaggle", Kaggle.com, 2016. [Online]. Available: https://www.kaggle.com/wiki/MultiClassLogLoss. [Accessed: 19- Apr- 2016].