MASK vs NO MASK Analysis Report

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Abstract

To prevent the spread of the corona virus, it is now mandatory to wear masks due to the pandemic situation. If people are wearing masks, they should not access public places or offices. As a result, we need a system that can automatically detect whether or not an individual is wearing a mask. So,we created a project that can determine whether or not an individual is wearing a mask or not.

I. EXPLORATORY DATA ANALYSIS

We first transformed the images into an array of numbers that represented pixel and rgb values because the data we had was in image format. The ' imread ' function of OpenCV library is be used to accomplish this. We divided the data into equal parts for training and testing after collecting it. One thing to keep in mind is that the data was somewhat unbalanced.

We divided the data into equal parts for training and testing after collecting it. One thing to keep in mind is that the data was extremely skewed. It has more No Mask data samples and less Masked data samples. As a result, we'll use F1 score as an assessment metric that can manage data with imbalances, as well as class-weight='balanced' to help balance the data.

II. TRAINING AND MODEL EVALUATION

Following classifiers were used:

A.

Support Vector Machine (SVM) : Since its one of the best classification models

Kernel used = 'rbf'

1) : F1 score : 0.8722680913064594

2) : Accuracy Score :0.994324067679558

B.

Logistic Regression model :since it can perform better on binary classification.

1) : F1 score : 0.8464037122969836

2) : Accuracy score : 0.992856526243094

C.

Perceptron model :since it can perform better on binary classification.

1) : F1 score : 0.8666666666666667

2) : Accuracy score : 0.9937845303867403

D.

Multi Layer Perceptron model:

1) : F1 score : 0.8252032520325203

2) : Accuracy score : 0.9907199585635359

E.

Random Forest:

1) : F1 score : 0.7273724629731212

2) : Accuracy score : 0.9892739986187845

III. Model Comparison

The performance of each model compared to others based on it F1 score :

SVM $>$ Perceptron $>$ LogisticRegression $>$ MLP $>$ Random Forest

IV. Contribution of each Member

Model Evaluations, Report : Vishwanath Pawar
Exploratory data analysis : Vamsi Krishna Kodavali

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