Shahjalal University of Science & Technology
Sylhet - 3114

Artificial Intelligence / Machine Learning Project

Real-time Face Mask Detection

Members:

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Objective:

"Real-time Face Mask Detection" is a Computer Vision and Deep Learning project. This project makes use of Python libraries for machine learning like OpenCV and TensorFlow for the detection of face masks on humans. Our goal is to train a custom deep learning model to detect whether a person is wearing a mask on his/her face or not. It will work on both still images and real-time live video footages.

Working:

- We have collected our dataset from the Kaggle repository and split it into training and testing data. The dataset contains 1950 images out of which 950 images have people with masks in them and another 1000 images have people without masks in them.
- We have used the OpenCV library to obtain the images of faces to train. The same images of people having and not having masks have been used so that it will be easier for the system to detect.
- We have processed the images in the dataset to turn them into strings.
- We have also resized all the images 224x224 to maintain uniformity.
- We have also shuffled the images so that the system will not use the name as an attribute of the image.

Our Goal:

- Train the system using the images of faces without masks based on human facial structures (Eyes, Nose, Mouth, Chin, Jawline) so the system can detect whether it is a human face or not.
- Once the system can detect faces it will try to locate all the parts of a human face. Based on the number of visible parts it can guess whether the person is wearing a mask or not.
- Building a Convolutional Neural Network by using TensorFlow to train a classifier for automatic detection.

Steps: Dataset ⟶ Process images with OpenCV ⟶ Train classifier with TensorFlow ⤵

Apply classifier to detect from face ROI (Mask or no Mask) ⟵ Detect the exact position of a face (ROI)

↳ Show Results