Face Expression Detection

Project summary- Archana Akella

Learnings

Learned about Google Collab and GPUs and How we can utilize these Resources for solving High level Computational Problems where Datasets consist of Images, Text, and Videos.

Learned how to build convolutional neural networks on Colab and re use the trained objects in our local machine to perform real time predictions.

Got introduced to Open CV and Dlib.

Created a Model that can detect different expressions in a face given their images.

Performed data augmentation on our images to make our model more robust.

Also performed two phase training on our models, where we have frozen a few layers before our model starts overfitting.

Also evaluated our model on Test set and applied real time prediction.

Understanding Problem Statement

Building Process

1.Dealing with Image data sets.

2.Performing Data Processing and Augmentation as and when required.

3.Creating and training a Convolutional Neural Network using Tensorflow 2.0

Prerequisites

Good Knowledge of Python programming language, as the whole code would be written in python.

In depth knowledge over Linear and Logistic regression because these are the Bricks of Neural Networks.

Understanding of Basic Image processing.

Basic Understanding on Artificial neural networks and Convolutional neural networks Working and Implementation

Facial Expression Recognition System

Facial expression recognition is a technology which uses biometric markers to detect emotions in human faces.

The six basic universal expressions: -

Happiness, Sadness, Anger, Surprise, Fear, and Disgust.

Understanding Facial Expression

Because facial expressions convey nonverbal communication cues that play an important role in interpersonal relations.

These cues complement speech by helping the listener to interpret the intended meaning of spoken words.

Use Cases - Market Research

Traditionally market research was done by conducting surveys to find out what consumers want and need, the methods involved employing people to observe reactions of customers while interacting with a brand or a product.

Facial expression recognition can save the day by allowing companies to conduct market research and measure moment-by-moment facial expressions automatically, making it easy to aggregate the results

Use Cases - Gaming Industry

Facial expression recognition can also be used in the video game testing phase.

A focused group of users are asked to play a game for a given amount of time and their behavior and emotions are monitored.

By using facial expression recognition, game developers can gain insights and draw conclusions about the emotions experienced during game play and incorporate that feedback in the making of the final product.