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Sentiment analyzer, tool which analyzes facial emotion in real time

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ABSTRACT: -

Face detection technology is a biometric technology, which is based on the identification of facial features of a person. People collect the face images, and the recognition equipment automatically processes the images. This project introduces the related research of face recognition from different perspectives. This project describes the development stages and the related technologies of face detection. We introduce the research of face detection for real conditions, forward-looking view of face recognition.

Introduction

A facial recognition system is a technology capable of matching a human face from a digital image or a video frame against a database of faces, typically employed to authenticate users through ID verification services, works by pinpointing and measuring facial features from a given image. Facial detection is a way of identifying or confirming an individual's emotion using their face. Facial detection systems can be used to identify person's facial expressions in real-time.

consumer retention by improving the quality of services.It also allowsuser to analyze his/her facial emotion in real time manner by capturing the images of user from camera.Social media sites such as Twitter offer valuable data that can be used by business owners not only to track and analyse customers' opinions about their businesses but also that of their competitors. Moreover, these valuable data attracted decision-makers who seek to improve the services provided.

In this research paper, several research papers that studied Twitter's data classification and analysis for different purposes

were surveyed to investigate the methodologies and approaches utilized for facial emotion classification. The authors of this research paper aim to obtain open-source datasets then conduct text classification experiments using machine learning approaches by applyingdifferent classification algorithms, i.e., classifiers. The authors utilized several classifiers to classify facial emotion of two versions of datasets. The first version is unbalanced datasets, and the second is balanced datasets. The authors then compared the classification accuracy for each used classifier on classifying texts of both datasets.

Problem Formulation

Around quintillions of data is produced every day. And also there is a huge amount of data given byusers/customers as a feedback towards a particular commodity or service. Here is a need to analyze whatviews or thoughts they have towards the same. So sentiment analysis helps us to do detection of his/her facial emotion by the users. Sentiment analysis plays a very important role in business strategies. Is helpsthem todo the bettermentin serviceswhat they areprovidingcurrently.

If you receive huge amounts of unstructured data in the form of images (emails, social media conversations, chats), you're probably aware of the challenges that come with analyzing this data.Manually processing and organizing such data takes time, it's tedious, inaccurate, and it can be expensive if you need to hire extra staff to sort through text.Now a days images and videos are the most popular which are being shared on social media through which detecting emotion of every data manually isn't possible.

So this models aims to saves manpower to read each and every review and come to the point.

Thus the proposed model has following objectives:

Obj1: To detect the facial expression.
Obj2: To analyze user emotions.
Obj3: To extract expressions of opinion describing a target feature and classify it as happy, angry, fear etc.
Obj4: To extract facial emotion in real time condition.

Solution Proposed

The Proposal is to deploy a system that takes user reviews or comments either from a product-based company or from social media influencers and apply NLP tools to obtain the polarity of typed sentence. Also, it will extract the most common words, extract total words entered, extract total characters entered,total number of tokens, unique number of tokens and performing a basic as well as semantic analysis.

Figure 1 shows the block diagram of pre-processing and training data
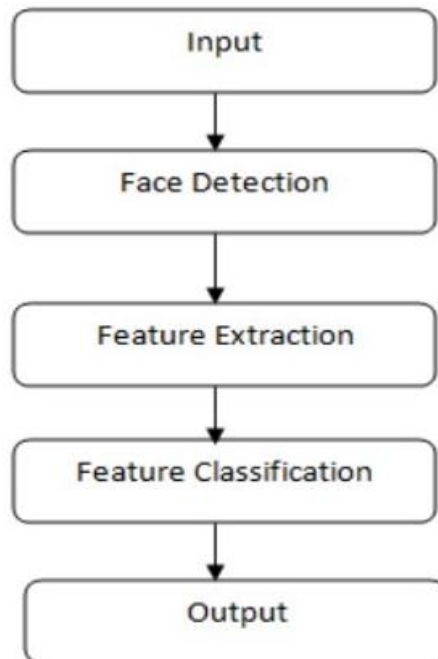

Figure 1 Block Diagram

Figure 2 below shows what actually sentiment analysis and polarity detector do towards the data user haveentered.
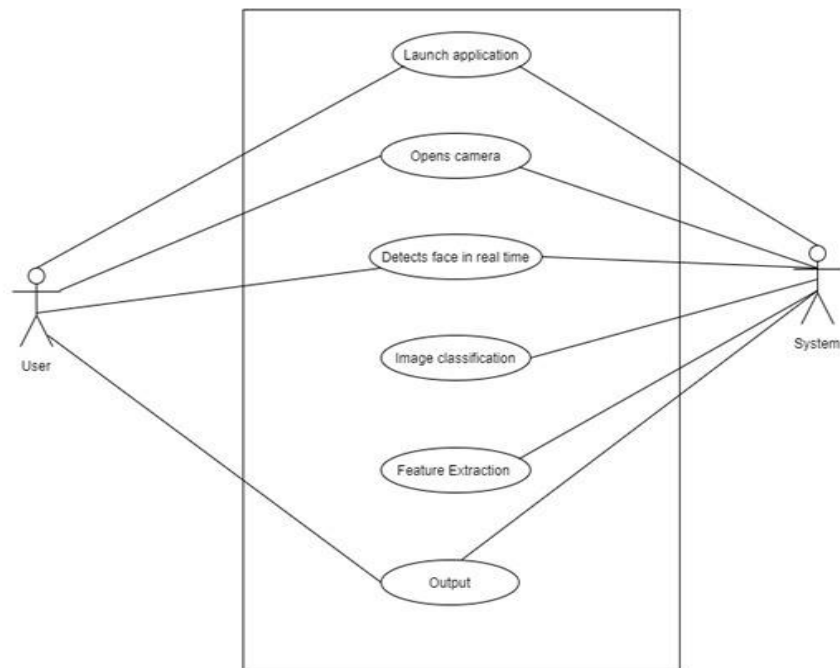

Figure 2. use case diagram

The implementation is as follows

1. User will run the code on the machine having PVM(Python Virtual Machine).
2. Launching of camera takes place.
3. Camera will detect face in rectangular frame.
4. After detecting face, it will extract the features.
5. After extracting, it will classify the features.
6. After classifying, it will give the result with the name of emotion on rectangular frame.

Belowattachedfigure4showsthedetection of face andfigure5showsemotion detection.

Figure 3.Face Detection

Figure 5. Emotion Detector

.Literature Review

In our work, the literature review has revealed interesting aspects indicating for a general computational flow, which can be applied to solve the challenge of recognizing human facial emotion from images or videos. One fundamental problem in sentiment analysis is categorization of facial emotion.

Pre-processing

Pre-processing step can be ignored for some approaches according to the dataset quality and whether previous preparation was done or notwhich may be responsible for the success or failure of a recognition system. It has the objective to slightly suppress some imperfections such as noise, reduce distortions.

Feature Extraction

It is a very important stage in recognition methods. It has as main goal to extract only the most important and descriptive piece of information, getting rid of what is not relevant for the given problem. This is usually necessary because of the high computational complexity of training in classification models.

Datasets for emotion recognition from images or videos

Datasets containing facial images or videos specifically developed for emotion recognition are not a novelty. As a consequence, many facial expression datasets have emerged, varying in acquisition environment, number of recognizable expressions, regions, among other features.

Classification algorithms

Usually the most valued stage in the whole process is the classification. This step is also the one with most variations between works over the literature. As mentioned on Section 1, there have been some arising methods based on neural network architectures over the past few years.

Emotion Recognition Methods from Facial Images or Videos

Due to the increasing use of NNB methods for the emotion classification, these kind of method's performance was expected to be superior than the classical methods, however, when analysing the accuracy of each method proposed by the selected papers, it was possible to observe that, on average, the applications that applied classical methods achieved better results

However, looking closer to this information in the general flow of computational facial emotion recognition.

Methodology

Your most unhappy customers are your greatest source of learning." — Bill Gates

This line of Bill Gates has a very important role in business tactics and also this is one of the only reason why Microsoft is among the top organization in these computational era. This paper presents a method to analyze users reviews and sentiment specifically to designed to work with movie reviews, hospital reviews, product reviews, college reviews, hotel/rooms reviews. The model is cop up with self-intelligent to preprocess the data user may enter.

We have use Haar classifier method based approach to preprocess the data like:

Haar classifier is considered as a robust face detection method in a real-time environment.

Haar features are considered to detect face edges, lines, motions, and skin colour. The Haar features are a black and white connected rectangular box, used for feature extraction

Haar features can be easily scaled, and the positions are examined by increasing or decreasing the pixel intensities at different parts of an image

 Haar classifier detects the features which contribute face detection problems in the training phase

 Reduces the computational cost and complexity in the testing phase that leads to high detection accuracy.

 After this captured image is ready to fed to model which will extract and classify the features, produce the output in the form of emotion.

IV.ResultDiscussions

 The results or outcomes are as follows:

 1. We are able to detect the facial emotion by capturing real time images.

2. We are able to extract and classify the features of images which is helpful in finding emotion of person..

Conclusion

After the development of project our team came towards following conclusion:

1. It will help consumer and producer sector in terms of betterment of their product.
2. Brand monitoring is one of the most popular applications of sentiment analysis in business. Bad reviews can snowball online, and the longer you leave them the worse the situation will be. With Sentiment analysis tools, you will be notified about negative brand mentions immediately.
3. User is able to get 360-degree analysis of facial emotion captured by camera.
4. It will help in getting a better idea about the service and quality of entities like hotels/resorts,hospitality, college etc.

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References

Reference Format for Journal Paper

[1] S.K. Gupta, L. Sharma, "*An Approach for Real Time Machine Learning Environment*", International Journal ofComputer Science and Engineering, Vol.1**6**, Issue.**22**, pp.4-10, **2020**.

Reference Format for Book/Book Chapter
[2] G. Sharma, "A Proposed Novel Approach for Internet of Things Protocol Execution Environment", IJCSERT Publisher,India, pp. **142-145**, **2020**.

Reference Format for Conference Paper

[3] P.B. Verma, "A Proposed Approach for Real Time Cloud Environment using Machine Learning", In the Proceedings ofthe 2020 International Conference on Data Science and Engineering, India, pp.**542-545**, **2020**.