FACIAL EXPRESSION RECOGNITION-BASED RESTAURANT RANKING USING DEEP LEARNING

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ABSTRACT: Recently, the popularity of automated and unsupervised restaurants has skyrocketed. The lack of personnel hinders a direct assessment of the patrons' perspectives, making learning about their experiences with the restaurant concept impossible. This study presents a face expression recognition grading system based on previously learned convolution neural network (CNN) models. It is made up of the depicted Android. Saeed et al. developed a cloud-based smart restaurant management system comprised of a web application for restaurant employees and an Android mobile application for customers. [1]. The smartphone app provides the user with an interactive menu from which they can, among other things, order food and pay their bill. Because there is no staff accessible, restaurant management finds it difficult to forecast how customers would react to a concept, a mobile application, a web server, and meal pre-ordering in unmanned restaurants. AIserver is being trained. Both the cuisine and the environment are likely to receive ratings. The grading method now includes three options for expression: satisfied, neutral, and unhappy.

1. INTRODUCTION

There has been a proliferation of ICT, IoT, and AI-based apps in recent years. The number of restaurants that are completely automated with no human staff is rising in step with this pattern. There are a growing number of successful companies without employees, particularly in Japan and Taiwan. Figure 1 depicts two eateries where it is unable to target certain demographics due to a lack of client age information. In part, this issue is addressed by preexisting rating systems like Google and TripAdvisor by only considering a subset of consumer ratings.

Fig:1. An automated restaurant operated inTokyo,Japan.

2. RELATED WORK

EXISTING SYSTEM:

It's difficult for business owners to gauge how patrons will respond to the concept and the food when they don't have a staff in place.

Existing

TripAdvisor and Google's star ratings ignore the vast majority of customers' experiences, thus they only address part of the issue. Only a select few patrons who have dined at the restaurant independently use these ranking methods to provide feedback. This is especially true of guests whose impressions, positive or negative, remain lasting long after they leave.

PROPOSED SYSTEM:

All customers should be surveyed about how to best address the issue I just described. Engineering Science Journal This paper proposes a system for evaluating restaurants in which each patron is asked to provide feedback following their dining experience. This is done so that we can collect as many votes as possible. This method makes use of pre-trained convolutional neural network (CNN) models for emotion recognition. These are suitable for usage in unattended eateries.

To determine whether or not the cuisine is satisfactory, the consumer should only snap a photo of himself expressing the desired mood. This rating system collects much less data and does not generate personalized reports of user experiences than do text-based rating systems. In contrast, this fast, simple, and entertaining review method should provide a broader spectrum of consumers' feelings regarding the restaurant's idea.

ARCHITECTURE AND DESIGN:

The proposed scoring system is illustrated in Figure 2. After a customer has eaten and paid, the same tablet can be used to solicit feedback on the meal and the dining experience as a whole.

A web server, a server with trained artificial intelligence, and an Android app make up the recommended approach for reviewing eateries. Through the app, the customer and the rating system can communicate with one another. The server is where the AI's face expression recognition takes place. The AI computer and the mobile app are not in constant communication with one another. Instead, all communication between these two is handled by a web server connected to a database.

System Architecture:

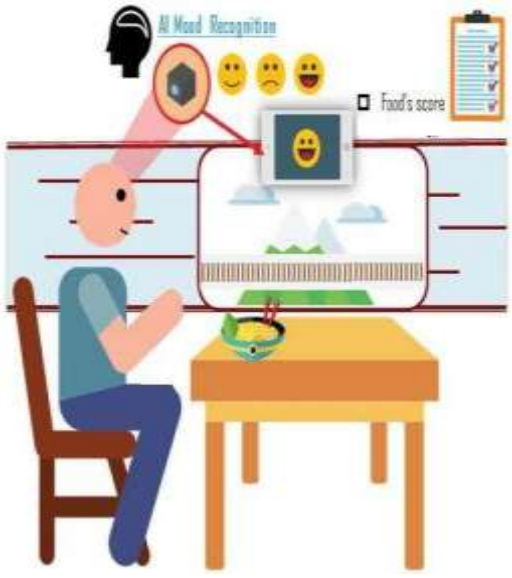

Fig:2.ApplicationofthescenariooftheRestaurantscoringsystem

3. MODULES

Face Detection:

Because the most basic facial features (the nose, eyes, and mouth) are sufficient for classification, face detection or localisation is a crucial part of the picture classification process. Facial recognition methods can be built on the basis of features, data, templates, or even just the way a person appears. The Viola Jones object identification technique is utilized to locate faces in our proposed approach, which is a part of feature-based categorization. Viola Jones's object-finding algorithm makes use of cascade classifiers based on Haar features. The Haar Cascade technique is frequently used for identity verification. To determine whether an image possesses a specific quality, use Haar features.

Facial Expression Recognition classification:

The final phase of FER (Facial Expression Recognition) is to categorize the face as belonging to one of the five basic emotional states. When compared to conventional approaches, which treat feature extraction and classification as two distinct processes, deep networks are capable of performing FER in its entirety. To correct the back-propagation blunder, a loss layer is added to the network's final stage. The network will then provide a simple prediction probability output for each sample. Most CNNs use softmax loss, a function that minimizes the cross-entropy between the distribution of predicted class probabilities and the true probabilities.

Convolutional neural network (CNN):

CNN is widely used in computer vision applications, and FER is no exception. To address the issues of subject independence, translation, rotation, and scale invariance, CNN was first utilized in a number of publications published around the turn of the century in the field of facial recognition (FER). These analyses also demonstrated that the CNN is robust to variations in face size and pose, and that it outperforms the multilayer perceptron (MLP) in novel face pose scenarios.

SYSTEM CONFIGURATION:

Hardware requirements: Processer : Any Update ProcesserRam : Min 4 GB

Hard Disk : Min 100 GB

Software requirements: Operating System : Windows family Technology : Python 3.6

IDE : PyCharm

4. CONCLUSION

Based on the results of this research, a method for ranking eateries is proposed. More perspectives can be acquired than with independent scoring platforms when customers are asked for feedback at the end of their visit. Since only two ratings are requested, only a rough picture emerges. When the cutting-edge technology of facial expression detection is applied in a less stringent scoring environment, it encourages the customer to provide feedback.

The method might be used in tandem with existing text-based rating services, such as Google rating, to take advantage of the strengths of both. More study is needed, but perhaps there is a method for people to judge locations without physically touching them. This requires sufficient accuracy in facial expression recognition. The image-based evaluation system could be improved by include speech detection. The user can voice his opinion and offer constructive criticism, much

like the way Google rating works.

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