EXPLORING BASIC EMOTIONS THROUGH FACIAL AND OBJECT ANALYSIS

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ABSTRACT

With the continuous development of deep learning, there are many applications that can be done with the help of deep learning. The analysis of emotions plays a major role in deep learning. The emotion analysis uses the Facial expressions. Face expression is that which tells about the mental stability in human perspective. Our project aims to check basic emotions along with age, gender and object analysis. The existing system uses Convolutional Neural Network which has many drawbacks and the proposed system uses Deep Neural Networks where it overcomes the drawbacks of CNN. With the help of Deep Neural Networks accuracy is improved.

Keywords: Deep neural networks, Emotions, Detection, Analysis

I.   INTRODUCTION

Facial Emotion Analysis is a technology used for analyzing basic emotions by different sources, such as uploading a pictures and videos. Facial Expression recognition algorithm is advanced to analyze a various type of human expressions- satisfied, unhappy, indignant and amazed. Object detection algorithm is advanced to analyze a various type behind Objects along with Human Face. Facial expression recognition is a technique done via human beings or computers, which includes finding faces in the scene called face detection. The objective of face emotion recognition using Deep Neural Networks (DNN) is to train a model that can accurately recognize human emotions based on facial expressions. The model uses the images of the face as input and learns to recognize patterns that correspond to different emotions. Once trained, the model can be used to classify the emotions of a new image of a face. The objective of object detection is to develop an system that can automatically identify and locate objects of interest in an image or video. Both face emotion recognition and object detection are challenging tasks in computer vision that require sophisticated algorithms and deep learning models. These tasks involve processing large amounts of image and video data and require the ability to accurately detect and classify complex patterns in the data.

II.   LITERATURE SURVEY

Niels Wouters , Ryan Kelly [1] proposed a system based on Biometric Mirror: Exploring values and Attitudes towards Facial   Analysis and Automated Decision making. In this paper, we discuss Biometric Mirror, a case study that explored opinions about the ethics of an emerging technology. The interactive application distinguished demographic and psychometric information from people's facial photos and presented speculative scenarios with potential consequences based on their results. We analyzed the interactions with Biometric Mirror and media reports covering the study. Our findings demonstrate the nature of public opinion about the technology's possibilities, reliability, and privacy implications. Our study indicates an opportunity for case study-based digital ethics research, and we provide practical guidelines for designing future studies.Junnan Li and Edmund Y. Lam [2] proposed a system based on Facial Expression Recognition Based Using Deep Neural Network. Develop a technique using deep neural network for human facial expression recognition. Images of human faces are preprocessed with photometric normalization and histogram manipulation to remove illumination variance. Facial features are then extracted by convolving each preprocessed image with 40 Gabor filters. Kernel PCA is applied to features before feeding them into the deep neural network that consists of 1 input layer, 2 hidden layers and a soft max classifier. The deep network is trained using greedy layer-wise strategy. We use the Extended Cohn- Kanade Dataset for training and testing. Recognition tests are performed on six basic expressions (i.e. surprise, fear, disgust, anger, happiness, sadness). Akriti Jaiswal, A. Krishnama Raju, Suman Deb [3] proposed a system based on Facial Emotion Detection Using Deep Learning. Deep learning (DL) based emotion detection gives performance better than traditional methods with image processing. This paper

presents the design of an artificial intelligence (AI) system capable of emotion detection through facial expressions. It discusses about the procedure of emotion detection, which includes basically three main steps: face detection, features extraction, and emotion classification. This paper proposed a convolutional neural networks (CNN) based deep learning architecture for emotion detection from images. The performance of the proposed method is evaluated using two datasets Facial emotion recognition challenge (FERC-2013) and Japaness female facial emotion (JAFFE). The accuracies achieved with proposed model are 70.14 and 98.65 percentage for FERC- 2013 and JAFFE datasets respectively. T. Ambikadevi Amma, M. R. Sruthy,S. Divya,P. Renuka [4] proposed a system based on 4 Real Time Facial Expression Recognition Based On Deep Neural Network. Now a days, emotion recognition plays a major role in interaction technology. In interaction technology the verbal components only play a one third of communication and the non-verbal components plays a two third of communication. A facial emotion recognition (FER) method is used for detecting facial expressions. This paper aims to identify basic human emotions with the combination of gender classification and age estimation. The facial emotions such as happy, sad, angry, fear, surprised, neutral emotions are considered as basic emotions. Guojun Yang, Jordi Saumell y Ortoneda and Jafar Saniie [5] proposed a system based on Emotion Recognition using Deep Neural Network with Vectorized Facial Features. Emotion reveals valuable information regarding human communications. It is common to use facial expressions to express emotions during a conversation. The vectorized facial feature can be used to build an DNN (Deep Neural Network) for emotion recognition. Using the proposed vectorized facial feature, the DNN can predict emotions with 84.33% accuracy. Nevertheless, compared with CNNs (Convolutional Neural Network) with similar performance, training such DNN requires less time and data.

III. METHODOLOGY

Emotion analysis is the process where basic emotions can be classified. There are basic emotions that can be estimated along with age, gender and object detection. Mainly there are 2 algorithms used for detection. There are YOLO v3 and Deep Neural Networks.

A. EXISTING SYSTEM
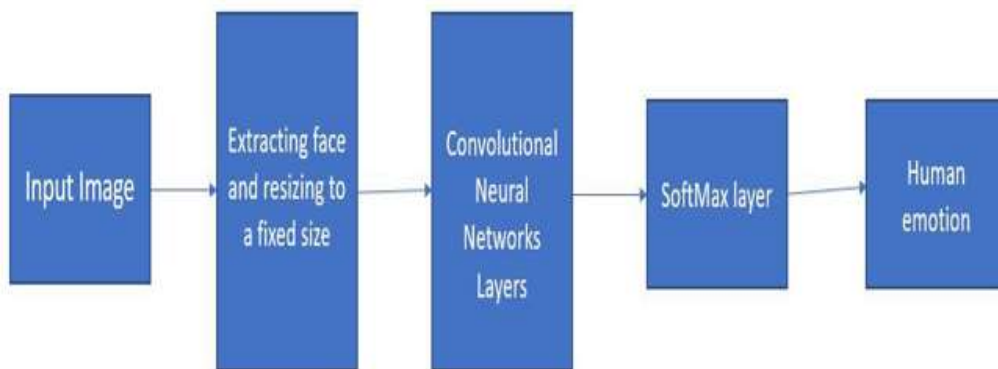
Figure 1: Existing System

DESCRIPTION

- Input: The system takes an image or a video stream as input, which may be preprocessed to enhance image quality and remove noise.
- Feature extraction: The input is fed through one or more convolutional layers to extract features from the image. These layers apply filters to the input, which help to identify edges, shapes, and patterns in the image.
- Pooling: The output of the convolutional layers is typically down sampled using pooling layers, which reduce the dimensionality of the feature maps and help to avoid over fitting.
- Soft max Layer: The use of the soft max layer in CNN-based face emotion recognition allows for probabilistic predictions, which can be useful in cases where there is uncertainty or ambiguity in the input. It also enables the use of standard classification metrics such as cross-entropy loss, which can be used to train the model to minimize prediction error.

- Classification: The resulting feature maps are then flattened and fed into one or more fully connected layers for classification. These layers use the extracted features to classify the image as belonging to a particular emotion or object class.
- Output: The system produces an output, which may include the class label or probability scores for each class

B. PROPOSED SYSTEM
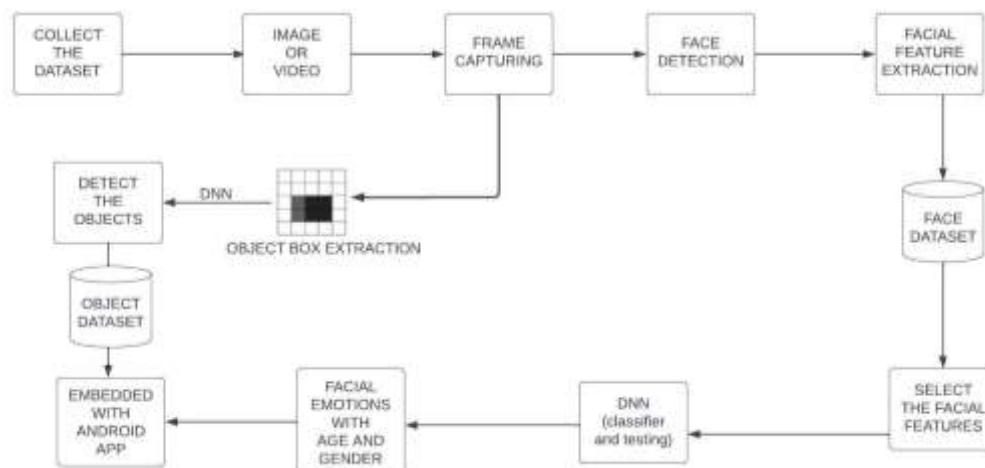

Figure 2: Proposed System

DESCRIPTION

- Firstly, we collect the dataset of YOLO and ONNX in the process of Face emotion recognition and object detection.
- Then it compare with input image or video ,it produce frame capturing.
- Then frame capture analyse face detection using viola Jones Algorithm with having Face Feature Extractions to face datasets.
- It will extracts the select facial feature using Adaboost Algorithm.
- Next, we select the some facial features for DNN classifier and testing purposes using LDA then process, it will detect the face emotions with some characteristics(Age & gender).
- In this output is embedded with Android Application and analyze object detection as using Captured image work with Adaptive block partition and Face emotic technique to detect the objects.

IV.   CONCLUSION

According to comparative study number of method and technique available for detect facial expression but still some of drawbacks are there to detect face emotion detection using image database. In proposed method try to improve accuracy for detect and identify face emotions using feature extraction technique. In future try to design for robust system for detect and identify facial expression for positive and non-positive emotion.

V.   REFERENCES

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