

FACIAL EMOTION DETECTION USING ARTIFICIAL INTELLIGENCE METHOD

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Abstract— Human emotions are mental states of feelings changes in facial muscles. Facial expressions, eye movement, and gestures are non-verbal communication methods used in many applications of human-computer interaction. To recognize facial expressions of people is identified by feelings of persons, if people were happy or sad. This will find out using artificial intelligence systems with machine learning algorithm. Facial expression of the humans will be detected using Convolutional Neural Networks. The Convolutional neural network works for recognition of emotions and make a prediction for extracting the physiological signals. This paper proposed the facial feelings such as anger, , happiness, sadness, fear and surprise.

Keywords—*Artificial Intelligence, Emotion recognition, Neural Network*

I. INTRODUCTION

An Artificial Intelligence (AI) is to develop human like intelligence in machines. How the human brain learns such a dream can be accomplished through learning algorithms. Machine learning, which is a field of artificial intelligence which works human like intelligence. Artificial Intelligence programs perform web search or photo tagging or email anti-spam. Artificial intelligence is important in the field of robotics.

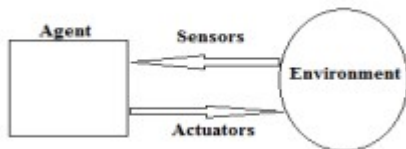


Fig.1 Perception cycle of AI

Facial expressions play a important role in detecting emotion in human beings. Communication between two entities interfaces is important. For this project is how computers can detect emotion properly from its various sensors. This experiment human emotion can be read by the facial image. The research on human emotion can be happy, sad, neutral, angry, disgust, fear, and surprise. These basic emotions can be recognized from a human's facial expression. Many algorithms used for the emotion recognition. Here we use Convolutional Neural Networks to emotion detection.

II. LITERATURE REVIEW

Methods of Machine Learning

Supervised Learning

This learning process is based on the comparison of computed output and expected output, that is learning refers to computing the error and adjusting the error for achieving the expected output. For example a data set of houses of particular size with actual prices is given, then the supervised algorithm is to produce more of these right answers such as for new house what would be the price.

Unsupervised Learning

Unsupervised learning is termed as learned by its own by discovering and adopting, based on the input pattern. In this learning the data are divided into different clusters and hence the learning is called a clustering algorithm. One example where clustering is used is in Google News (URL.news.google.com). Google News groups new stories on the web and puts them into collective news stories.

Reinforcement Learning

Reinforcement learning is based on output with how an agent ought to take actions in an environment so as to maximize some notion of long-term reward. A reward is given for correct output and a penalty for wrong output.

Reinforcement learning differs from the supervised learning problem in that correct input/output pairs are never presented, nor sub-optimal actions explicitly corrected.

Recommender Systems

Recommender systems can be defined as a learning techniques by virtue of which online user can customize their sites to meet customer’s tastes. For example, online user can get a rating of a product or/ and related items when he/she searching an items because of the existing recommender system. That is why it changed the way people find products, information, and even other people. There are mainly two approaches: content based recommendation and collaborative recommendation, which help the user for obtaining and mining data, making intelligent and novel recommendations, ethics. Most e-commerce site uses this system.

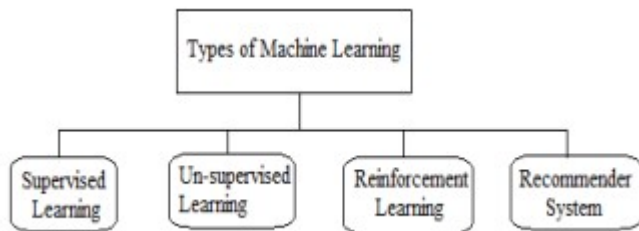


Fig.2 Types of Machine Learning

III.METHODOLOGY

This proposed method can detect the live feelings of the particular user; system compares the information with a training dataset of known emotion to find a match. From facial expressions different emotion types are detected through the integration of information, body movement and gestures, and speech. This proposed work considers the leading challenge faced by machine learning and the entire system is the training part. In this system using real data of human face reactions has to train. For example, if the system has to detect an happy face then the first system has to be acquainted with the happy face. Also if the system has to detect a sad face then the first system has to be acquainted with the sad face. the system with this emotion types, the re-training process has been used to collected from the real world. Machine learning enables the capability of detection emotion more accurate.

Detection

Object detection the Viola-Jones algorithm is mostly used because this algorithm detection is fast but training is slow, This algorithm uses the Haar basis feature for face detection. Distance-based algorithms find out the eye matrix,

other facial parts are segmented. Different expressions are shown in Figure 3 after performing k-means clustering.



Fig.3: K-means clustering segmentation outputs

Emotion Detection Data Flow Diagram is shown in Figure 4.

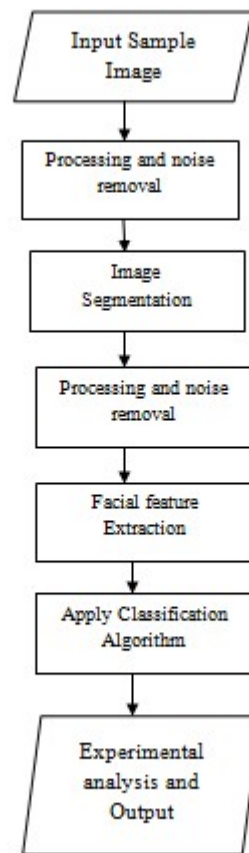


Fig.4 Emotion Detection Data Flow Diagram

IV.RESULT AND ANALYSIS

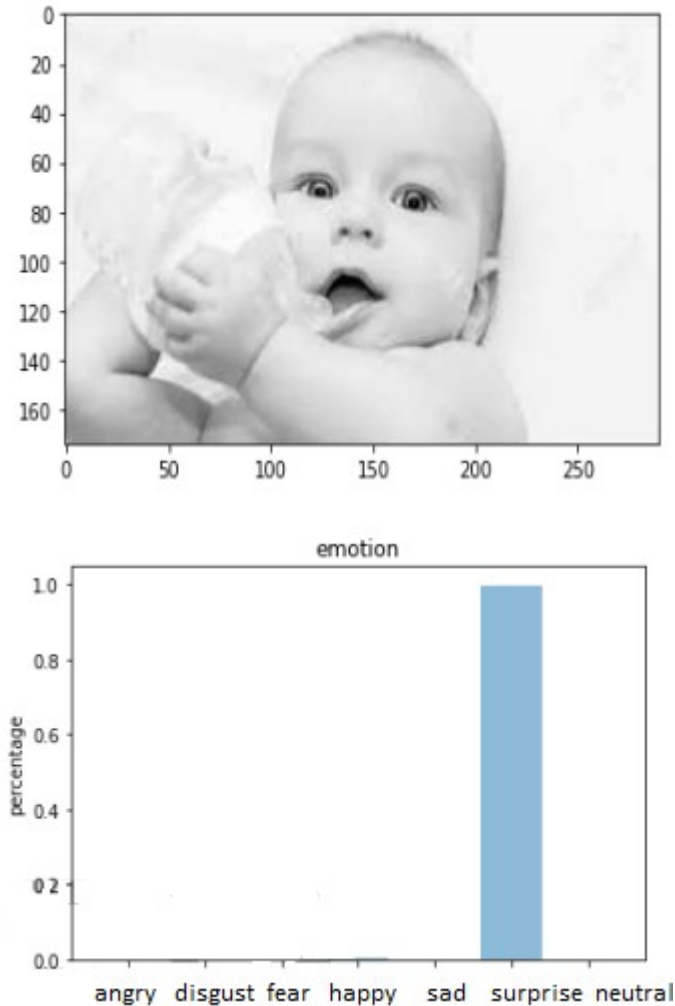


Fig.5 Expression with surprise emotion

Machine learning algorithms work well on the emotion for the image. The deep learning classifier is runs data through several layers and can be useful for less unpredictable issues. For pictures, the regular benchmark for preparing profound Decision tree is used for perfect visualization of emotion detection pattern analysis. In the decision tree is very helpful and this character is represented by the nodes and layers. The advantage of the decision tree is that it is and easy to visualize the emotion and interpret the

result. The working process of a decision tree is under different types of emotions. Figure 5 shows the surprise emotion of the above image.

V.CONCLUSION

In real time human can n identify another human's emotions by looking at him or her. However, in this modern days machines are becoming more accurate. Deep learning CNN algorithms follow the framework and to identify the emotion expression patterns more effectively, type of emotion in the real image. To determine the emotion expression patterns this paper different types of emotions are notified which helps to decide which emotions percentage is high and which emotions percentage is low. Finally most possible accurate emotions is the high percentage of emotions.

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