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PROTOTYPE-INCORPORATED EMOTIONAL NEURAL NETWORK

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ABSTRACT:

An artificial neural network is a combination of hardware or software which simulates the operation of neurons inside the human brain. Neural networks also called as Artificial Neural Networks(ANN), Neural networks AKA Artificial Neural Networks is a sub-branch of artificial intelligence. The two main important theories.Two of the important theories so far have been used in artificial neural networks are adaptive learning and proto-type learning. Internal parameters depending on the model are adjusted to take the classes and class parameters keep varying. Adaptive learning theory uses examples of several classes and parameters can be adjusted internally. Where as prototype learning use prototypes for each class, there are a number of classes and one prototype per class exists. In this model we are implementing a new algorithm using prototype incorporated emotional neural network which is changing according to the new characteristics which are being received from the new hardware where depth sensor is added.

Objectives

In machine intelligence fields, various tasks can be achieved such as recognizing face, identifying speaker, natural language processing and document segmentation that is based on motivations from human cognition processing. Many of these tasks are kind of "trivial" hoe human beings, where machines perform competitively. Using machine learning techniques Prototype-Learning Theory, Adaptive-Learning Theory, Multi prototype Learning Versus Exemplar Learning model aims to achieve static hand gestures and facial recognition.

LITERATURE SURVEY

[1] Prototype-Incorporated Emotional Neural Network

Oyebade K. Oyedotun, Adnan Khashman

Artificial Neural Networks (ANNs) aims in simulating the biological neural activities. Engineering prospects in ANN mostly rely on motivations from psychology and cognition studies. Two important learning theories are Prototype & Adaptive learning theories. The learning rules applied for ANNs are similar to adaptive learning theory, where various examples belonging to a particular task are supplied to a network for adjusting the parameters internally. In Prototype-learning theory, prototypes are usually used, one prototype per class of the different classes contained in the task. This paper proposes a model that implements a neural network algorithm based on modifying the emotional neural network (EmNN) model to unify the prototype and adaptive-learning theories. Model is
referred as "prototype-incorporated EmNN". Static hand-gesture recognition and face recognition, and compare the result to those obtained using the popular back-propagation neural network (BPNN), emotional BPNN (EmNN), deep networks, an exemplar classification model, and k-nearest neighbour.

Existing System:

A system which has been developed using prototype learning theory and adaptive learning theory is used to recognize static hand gestures and facial recognition. A dataset of sample of the images are given which are trained into an algorithm and algorithm converts those images into gray scale that is black and white image where only binary numbers 1 and 0 are used to represent the image.

It recognizes the image characteristics where 1 is there in the image dataset and then prototype per class is taken into consideration where either 1, 2, 3, 5 prototypes per class are taken for matching these images with target images.Prototypes for target image which has two matched are also taken by converting the target image also and getting the characteristic, and then further characteristics of target image are matched to all the images in the dataset and identifies which one has maximum similarities is prototypes and decides the best match for it. In this system, it is said that 3 prototypes per class gives the best results for matching the image in static hand gesture and facial recognition, the entire model is only for static images it can only perform the recognition of images for which data set is trained before attempting to match the image.

Limitations of the existing system

The existing model used prototype incorporated emotional neural network uses a simple image which gets only 2D pixel data most of the times similar kind of images are mismatched. And using the less than 3 prototypes per class or more than 3 image mismatch, It is a very slow process for recognition as first it has to train the input image dataset and then target image is matched with the target image. It is not accurate as every image is converted to gray scale and it uses prototype per class where similar images will have very similar characters in their classes which is further difficult to recognize If the image is also one of that similar images, then it selects any image randomly which matched more prototypes per class among three which sometimes is incorrect.

Proposed model

In this model we are modifying multi-task convolution network algorithm and implementing the face detection, First the input dataset has to be trained into the algorithm, In the dataset every image must be resized to get an image pyramid of various sizes, in any image it is not difficult for it to recognize faces in it, in case if the image is too small or smaller scale image it is unschooled and makes it big to look original sized and to identify the image, But still there are many bounding boxes left and most of them overlap method like Non maximum suppression (NMS) can be used to reduce the number of bounding boxes. After the NMS is applied large overlaps in

the image which are prevailing already will get reduced to small overlaps however it does not remove 100% overlap. We cannot completely remove the overlapped bounds it might contain the image of the face also sometimes so while considering the characteristics of the image it takes characteristics more from the part of the image where overlap is not there and still it considers the characteristics of image which is overlapped. If the bounding boxes are not in square shape we can stretch the shorter side of the shape to make it square and at the same time not missing any characteristics of an image. When images with multiple faces are recognized it identifies the faces and darkens the rest of the image, it considers the image as an array of faces where each face can have its characteristics stored in the array. In this model it can recognize multiple faces in one image in existing model it cannot do that. This model can perform the face recognition even faster as it does not convert every image to gray scale and then take prototypes per class, here a different approach is used which is faster and less time consuming.

Conclusion

The work builds on multi-task convolution algorithm. It recognizes the faces matching with dataset given and also it can identify and recognize multiple faces in one photo and it can recognize the face from it, using this algorithm improves the efficiency it gives more accurate results than the referred model prototype incorporated emotional neural networks.

