Face Recognition - Emotion Detection

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About Project

In this deep learning project for beginners, we have built a convolution neural network to recognize facial emotions. We have trained our model on the FER2013 dataset. Then we are mapping those emotions with the corresponding emojis or avatars.

Using OpenCV's haar cascade xml we are getting the bounding box of the faces in the webcam. Then we feed these boxes to the trained model for classification.

About Libraries

Numpy : It's a basic level external library in Python *used* for complex mathematical operations.

OpenCV : OpenCV is a cross-platform library using which we can develop real-time **computer vision applications**. It mainly focuses on image processing, video capture and analysis including features like face detection and object detection. In this tutorial, we explain how you can use OpenCV in your applications

Tensorflow : Tensorflow allows developers to create a graph of computations to perform. Each node in the graph represents a mathematical operation and each connection represents data. Hence, instead of dealing with low-details like figuring out proper ways to hitch the output of one function to the input of another, the developer can focus on the overall logic of the application.

Keras : Keras is used for **creating deep models which can be productized on smartphones**. Keras is also used for distributed training of deep learning models

About Data-Sets

The FER2013 dataset (facial expression recognition) consists of 48*48 pixel grayscale face images. The images are centered and occupy an equal amount of space. This dataset consist of facial emotions of following categories:

- 0: angry
- 1: disgust
- 2: feat
- 3: happy
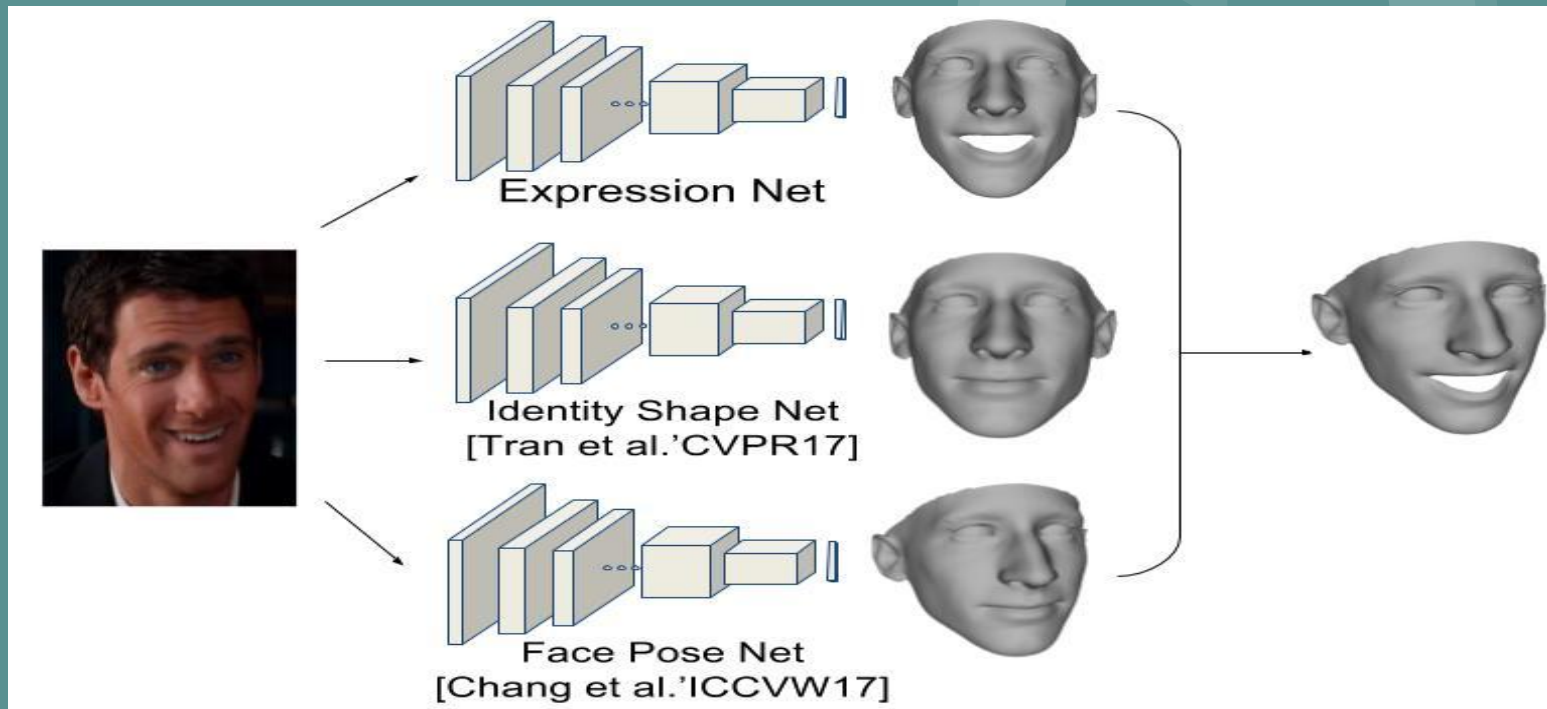- 4: sad
- 5: surprise
- 6: natural

Algorithm used in Project

- A convolutional neural network, or CNN, is a deep learning neural network sketched for processing structured arrays of data such as portrayals.
- CNN are very satisfactory at picking up on design in the input image, such as lines, gradients, circles, or even eyes and faces.
- This characteristic that makes convolutional neural network so robust for computer vision.
- CNN can run directly on a underdone image and do not need any preprocessing.
- A convolutional neural network is a feed forward neural network, seldom with up to 20.
- The strength of a convolutional neural network comes from a particular kind of layer called the convolutional layer.
- CNN contains many convolutional layers assembled on top of each other, each one competent of recognizing more sophisticated shapes.

Emotions Classification

	ANGRY	DISGUST	FEAR	HAPPY	NEUTRAL	SADNESS	SURPRISE
KM							
MM							
UY							

Working

Thank-You