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## GENDER, AGE AND EMOTION PREDICTION FROM IMAGES USING MACHINE LEARNING

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**Abstract:** In this paper we describe a methodology and an algorithm to estimate the gender, age, and emotion of a human by analyzing of face images. A lot of research has been done using deep learning methods such as ANN, CNN, DeepFace to determine gender, age estimation, and emotion detection. Various approaches to dealing with this problem has been proposed by the researches, but actual criteria and the results remain inadequate. Today's applications have reached a high level of accuracy (i.e 97%) with the help of DeepFace. In this system we use some libraries (i.e OpenCV and Matplotlib) to load and display the images and also use DeepFace library (i.e DeepFace is a deep learning facial recognition system created by a research group at Facebook. It identifies human faces in digital images and predicts the gender, age, and emotion). DeepFace is a pretrained algorithm it includes Feature extraction which extracts Features corresponding to age, gender, and emotion, Furthermore DeepFace also comes with a strong facial attribute analysis module including predicted age, gender, emotion (such as happy, sad, angry, neutral), and we can also compare two face images with the help of DeepFace library and predicts the result.

Our focus is mainly on improving the accuracy of image detection on our system by using DeepFace library and with simple structure of code. Our system use some Real time applications to get better results.

**Index Terms** - Facial images, Databases, DeepFace Library, opencv Library, Matplotlib Library.

### I. INTRODUCTION

Automated gender and age detection has been generally used in our daily lives that we come across, majorly in a person to computer interaction, visual surveillance, biometric analysis, electronics and other applications of commercial use. By recognizing the emotions of a person, we can improve the recommendation system. Here, we use abstraction concept that is defined as a process of handling complexity by hiding unnecessary information from the user. This is one of the core concepts of object-oriented programming (OOP) languages. That enables the user to implement even more complex logic on top of the provided abstraction without understanding or even thinking about all the hidden background/back-end complexity. An improvement in the performance of these tasks was observed by utilizing the set of facial features in real-time applications.

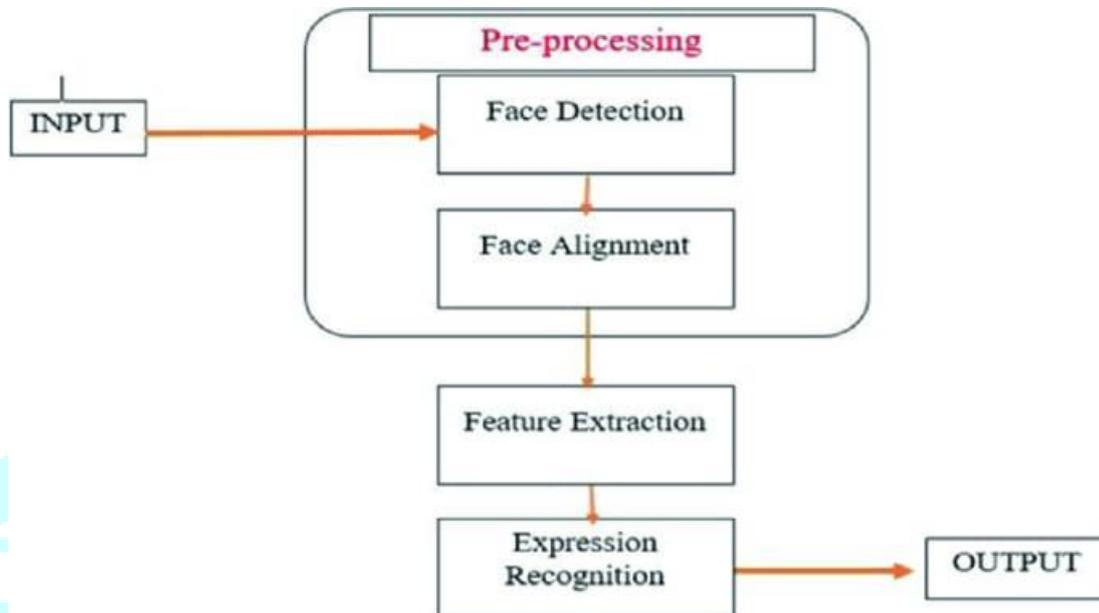
### II. EXISTING SYSTEM

The existing methods have quite satisfying performance on real-world images if facial expressions of input image is neutral or calm, it lacks significantly in age prediction when facial expressions are altered. The Convolutional Neural Network (CNN or ConvNet) is a subtype of Neural Networks that is mainly used for applications in image and speech recognition. Its built-in convolutional layer reduces the high dimensionality of images without losing its information. The main advantage of CNN is that it automatically detects the important features without any human supervision. This is why CNN would be an ideal solution to computer vision and image classification problems. That is why CNNs are especially suited for this use case. The dataset was obtained from IMDB- WIKI for age-gender classification and Fer2013 dataset for emotion recognition from kaggle. The accuracy of the wide-resnet model is 96.26% and for the emotion recognition model, accuracy achieved is 69.2%.

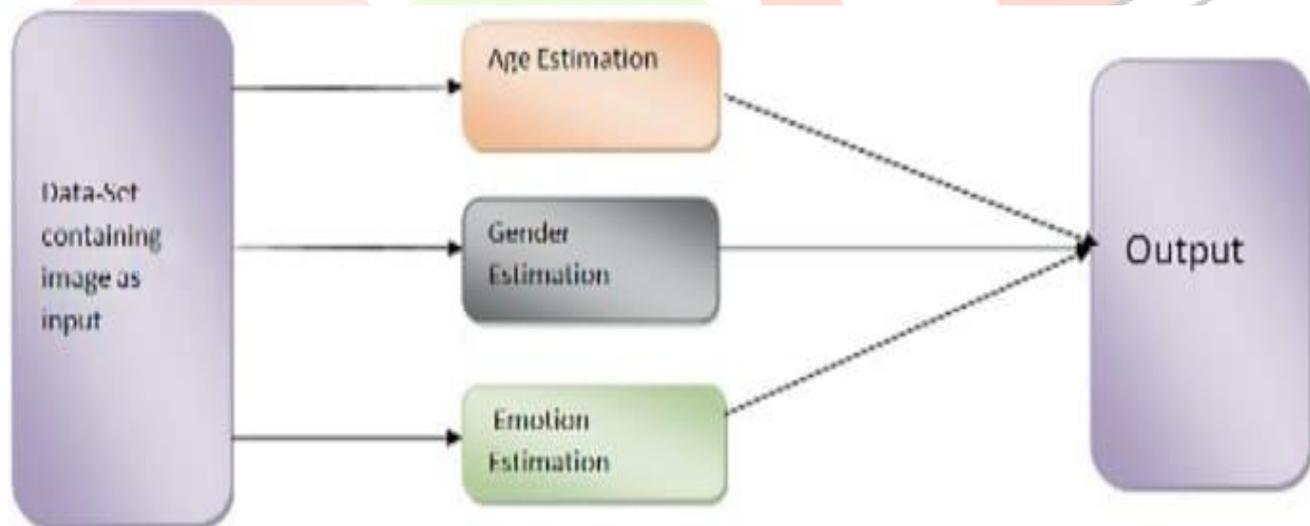
### III. PROPOSED SYSTEM

The primary objective of the proposed methodology is to recognize the gender, age, and emotion, from human face images utilizing the set of facial features in real-time application. Gender, age, and emotion are predicting from a single face image is an important task in intelligent applications, such as access control, human computer interaction, marketing intelligence and visual surveillance. In this proposed system we use some libraries (i.e OpenCV and Matplotlib ) to load and display the images We use DeepFace library( i.e DeepFace is a deep learning facial recognition system created by a research group at Facebook. It identifies human faces in digital images and predicts the gender, age, emotion, and race)

### IV. IMPLEMENTATION



### V. MODELLING



### VI. RESULTS

DeepFace is one of the most popular open source for facial recognition library.

Whilerunning DeepFace with just few lines of code, we don't need to acquire in-depth knowledge about all the processes behind it.

Developers are permitted to use, modify and distribute the library.

## VII. CONCLUSION

We focused on a system which provides a real time working environment. Our focus is mainly on improving the accuracy of image detection on our system by using DeepFace library and with simple structure of code. It is very difficult to accurately guess an exact age from a single image because of factors like makeup, lighting, obstructions, and facial expressions. And so, we make this a classification problem instead of making it one of regression.

## VIII. REFERENCES

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