



Research Paper

Real-Time Age and Gender Prediction

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Abstract: Age and gender identification have grown to be important components of the biometric system, protection, and care. People frequently use it to get age-appropriate content. Social media makes use of it to broaden the reach of multilayer advertising and promotions. Face detection has become so widely used that we need to improve it using a variety of techniques to get more accurate results. We have created a lightweight deep Convolution neural network model for age and generation prediction in this paper. Wiki, UTKFace, and Adience datasets have been combined to create a single dataset of 18728 photos in order to increase the diversity of the training dataset. With this sizable mixed dataset, we were able to attain a real-time accuracy of 48.5980.76. several experimental studies.

Index Terms – CNN(Convolution neural network), Age Prediction, Gender Prediction, Biometric System, Face Detection

Received 10 Dec., 2022; Revised 23 Dec., 2022; Accepted 25 Dec., 2022 © The author(s) 2022.

Published with open access at www.questjournals.org

I. INTRODUCTION

Identification based on age and gender has become a crucial part of the biometric system, protection, and care. It is widely used by people to get age-appropriate content. It is used by social media to increase the reach of multilayer promotions and advertising. We need to apply a variety of strategies to improve face detection because it is now being used so frequently. In this paper, we develop a lightweight deep convolution neural network model for predicting generation and age. To broaden the diversity of the training dataset, the Wiki, UTK Face, and Adience datasets were pooled to provide a single dataset of 18728 images.

II. LITERATURE REVIEW:

2.1. PaperName: A light weight Deep Convolutional Neural Network Model for Real-Time Age and Gender Prediction

Author: Md. Nahidul Islam Opu, Tanha Kabir Koly, Annesha Das and Ashim Dey

Abstract:

Age and gender identification have grown to be important components of the biometric system, protection, and care. People frequently use it to get age-appropriate content. Social media uses it to spread multilayer advertising and promotions and broaden its reach. Face detection has become so widely used that we need to improve it using a variety of techniques to get more accurate results. We have created a lightweight deep Convolution neural network model for age and gender prediction in this paper. Wiki, UTKFace, and Adience datasets were combined to create a single collection of 18728 photos in order to increase the diversity of the training dataset. With this sizable mixed dataset, we were able to attain a real-time accuracy of 48.5980.76. several experimental studies.

2.2. Paper Name:

Use of Ensemble Modeling to Predict Age, Makeup, and Illumination from Faces

Author: Kundan Nigam, Sahil Sharma

Abstract:

Classification based on factors like gender, appearance, age, and lighting has grown in importance and potency for real-time applications. However, when compared in terms of optimization, the performance of the current method is weak. To achieve more optimal findings, we used a variety of machine learning models in our study article. We attempt to create ensemble algorithms for reliable age classification ranges, which are divided into four groups: child, young, middle, and old. Similar to how makeup classification ranges are split into partial makeup and over makeup, gender classification ranges are split into male and female, while illumination classification ranges are define.

2.3. PaperName: Shiv Mittal and Vikram Singh Rajput's paper, "Gender and Age based Census System for Metropolitan Cities,"

Abstract:

This study describes a clever computer-vision system that determines a person's legal age and gender, stores the information for census purposes, and aids in ensuring orderly entry of people into locations. Deep learning-based facial image classifiers are used in the system to instantly determine a person's gender and age from an image of their face. The computer vision algorithm's prediction is used to generate the actuating reaction, and it also maintains track of all faces it encounters and the number of people who have those faces in common. You may monitor the log of the entire surveillance process online.

2.4. Paper Name: Real-Time CNN and ResNet Gender Classification and Age Prediction

Author:Asad Mustafa, Kevin Meehan

Abstract:

The face is the most prominent element of the human body, and we can learn a lot about someone's identity from their facial traits, including age prediction and gender categorization. Computer vision (CV) is currently being used to teach machines how to understand and see the actual world. This study presents a unique artefact that uses a live stream from a camera source to recognise faces, categorise genders, and age-predict from human facial photos. The Keras CV library and Convolutional Neural Networks (CNN) have both been utilised for training. This innovative study relies on each features.

2.5. Paper Name: Human Age And Gender Classification using Convolutional Neural Network

Author:Mohammed Kamel Benkaddour

Abstract:

The development of intelligent systems capable of effectively learning and recognising objects is the major goal of the very active research fields of pattern recognition and automatic classification. The usage of biometrics, which is generally utilised for security considerations, is integral to these applications. In the realm of research, the face modality has grown in importance as a basic biometric technique. The objective of this work is to create a system for estimating age and gender from a facial image or real-time video using convolutional neural networks. In this study, three CNN network models with various architectures (number of filters, number of convolutionlayers

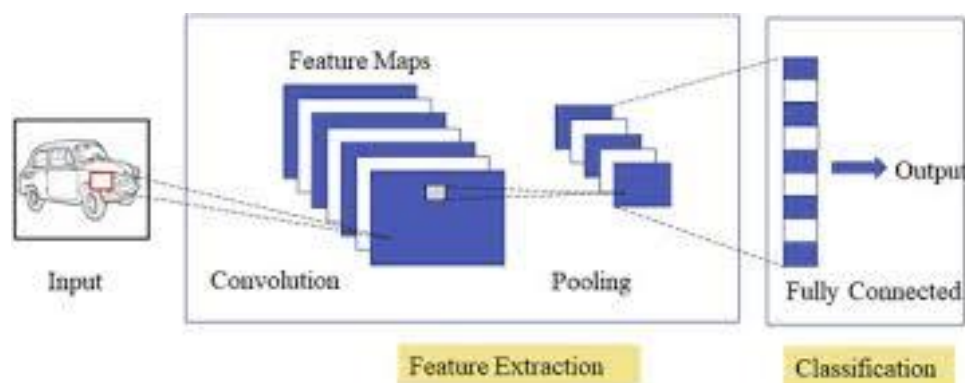
III. METHODOLOGY

3.1. CNN ALGORITHM:

Convolutional Neural Networks with a focus on image and video recognition applications. CNN is primarily utilised for image analysis applications such segmentation, object detection, and picture recognition.

Convolutional Neural Networks have three different kinds of layers:

- 1) **Convolutional Layer:** Each input neuron in a conventional neural network is connected to the following hidden layer. Only a small portion of the input layer neurons in CNN are connected to the hidden layer of neurons.
- 2) **Pooling Layer:** The pooling layer is used to make the feature map less dimensional. Inside the CNN's hidden layer, there will be numerous activation and pooling layers.
- 3) **Fully Connected Layer:** Fully Connected Tiers make up the network's final few layers. The output from the last pooling or convolutional layer is passed into the fully connected layer, where it is flattened before being applied



IV. CONCLUSION AND FUTURE SCOPE::

In this study, we created a compact CNN model that is perfect for mobile device integration. And we did it without significantly sacrificing accuracy. Using a sizable combined dataset, the model has an accuracy of 48.59. Comparing the model constructed on the mixed dataset to other state-of-the-art studies, it is evident that it performs well with unknown data and produces positive results in the real-time test. We intend to expand the number of datasets from various sources and improve age accuracy. The proposed approach will also be used to create a smartphone application that can instantly estimate gender and age. Additionally, we'd like to improve the model to account for unique situations like mask-covered faces.

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