A Deep Learning Model on Face Matching

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Abstract: *The project is mainly aimed at the face is of correct or not. Face recognition is the problem of identifying and verifying people in a photograph by their face. It is a task that is trivially performed by humans, even under varying light and when faces are changed by age or obstructed with accessories and their facial hair. In this project, we will discover the problem of face recognition and how deep learning methods can achieve superhuman performance to identify similar faces. To this system we pass image and it can detect that it is real or fake using Image Processing Technique.*
Key Word: *Face recognition, Efficient security, Easier integration*

I.INTRODUCTION

A Deep learning based model which can detect the face of person is correct or not. In this digital world Deep learning methods are able to leverage very large datasets of faces and learn rich and compact representations of several faces, allowing modern models to first perform as wall and later to outperform the face recognition capabilities of humans.

To this system we pass image of an individual person and it can detect that it is original or fake using the Image Processing Technique. This system will be helpful in monitoring and tracking the images for unusual accesses access of any system that is protected using facial recognition. This software uses Multi – task Conventional Neural Network (MTCNN) algorithm which offers more accurate detection of fake images compared to other techniques with 97 %.

History and milestones of Face Recognition. In the 1990s and 2000s, holistic approaches were popular until local-feature-based methods were introduced in the 2000s and 2010s. Since 2014, deep learning-based approaches took over.

II. DATASET USED

1- We mentioned that this paper only focuses on the technological data collected during the experimentations, namely on the information concerning the performance of the model and the procedures. Other papers describe the sociological results of the experiment, such as e.g. – Behaviour of model towards the recognition systems and how the introduction of new technologies shifts the meaning of recognition and verification through this model.

2- Face recognition in static images and video sequences, captured in unconstrained recording conditions, is one of The most widely studied topics in computer vision due to its extensive range of applications in surveillance, law enforcement, bio-metrics, marketing, and many more.

3 - In 2014, Facebook's Deep Face and Deep ID achieved state-of-the-art accuracy on the famous Labeled Faces in the Wild (LFW) benchmark, surpassing human performance in the unconstrained scenario for the first time. Since then, the research focus has shifted to deep-learning-based approaches. Deep learning methods use a cascade of multiple layers of processing units for feature extraction and transformation. Hence, larger-scale face databases and advanced face processing techniques have been developed to facilitate deep face recognition. As a result, with the representation pipelines becoming deeper, the LFW (Labeled Face in-the-Wild).

4 - The top row shows typical network architectures in object classification. The bottom row shows face recognition algorithms and their architecture. – Source In the following, the most popular evaluation datasets for face recognition are listed: Fast face verification datasets Labeled Faces in the Wild (LFW) Celebrities in Frontal-Profile in the Wild (CFP-FP) Cross-Pose LFW (CPLFW) Database Collected, in-the-wild age database (Age DB) Large-scale face verification and identification datasets Million-Scale Face Recognition (Mega Face) IARPA Janus Benchmark-B face challenge (IJB-B) IARPA Janus Benchmark-C face challenge (IJB-C) Video- based face verification datasets YouTube Faces Database (YTF).

5 - This article provides a list of the most popular deep learning software tools for developers and data scientists today.

Explore what software solutions businesses across industries use to realize their AI strategy. Find new ideas and tools to implement deep learning projects faster and better. If you are looking for deep learning use cases and computer vision applications in your industry, find your industry in the Viso Blog.
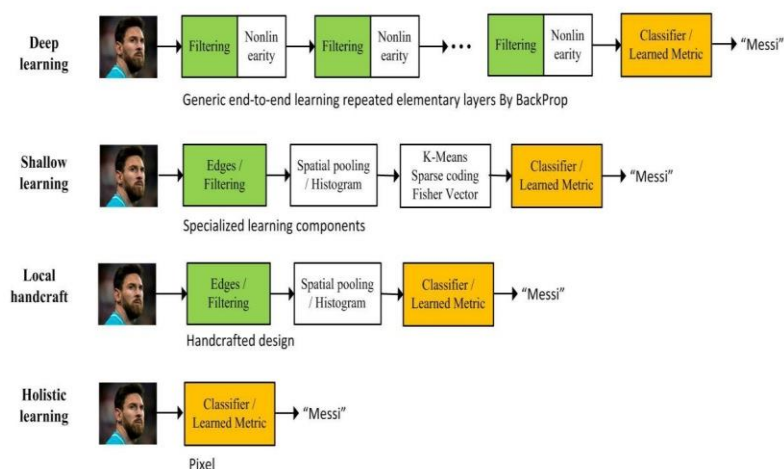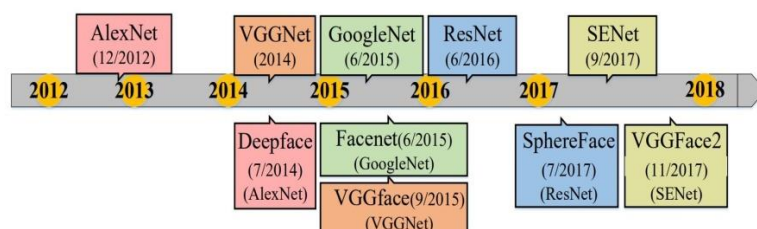

Fig.1: [Classification of Image]

Fig.2: [Deep Learning Model Working]

III.LITERATURE SURVEY

Numerous face matching studies have been conducted using various machine learning techniques and algorithms that can be used by different institutions. This paper gives an overview of some of these studies conducted in research papers using the techniques and results they used.

Francis Galton et al. [1] In machine learning, dataset can play a significant role in determining the output. The authors of proposed that Machine Learning algorithms plays important role in matching face accurately. Logistic regression and auto regression, ANN help in determining the exact face. Artificial Neural Network is best among all. However, there still lacks a survey that can analyze and summaries the existing approaches. To bridge up the issue, this survey paper details the task of air quality index prediction using ml by summing up the existing datasets and their collection methods. It analyses the existing feature extraction techniques.

W. Zhao et al. [2] In this presented paper we try to conduct a survey on several ML algorithms that are used to solve the problem of accurate face detection as it try to see the solutions which are provided by several other methods From the results, concluded that the Random Forest algorithm gives better result of face matching. It also summarizes and analyses the existing techniques critically to identify gaps based on two groups: traditional statistical machine learning and deep learning methods. The experimental results on two benchmark datasets show that the performs about 7% better than the state-of-the-art methods in a mixed domain for the deception dataset with the highest accuracy of 91.2%. L. Zheng et al. [3] have developed a system that provides better results. In this research paper it introduces some machine learning techniques like Naıve-Bayes, Support Vector Machine and Decision Tree for the accurate result of face matching using the dataset. In this authors proposed model by using BILSTM which is the Deep Learning model to determine the crorrect face of person with improved performance comparing the existing model and produced exceptional MAE, L. Wiskott et al. [4] developed a model for determing the correct face using machine learning approaches and used several techniques The proposed method classifies by phase-wise processing. In this paper, we are processing different dataset by using different data mining techniques. This can help people to see the exact result. In this authors used the prediction model results were based on Big Data Analytics and Machine Learning, which have helped to evaluate and contrast current assessments of air quality. Among all the algorithms, the Decision Tree algorithm produced the best results. K. Chang et al. [5] In today's world, research plays a critical role in decision-making. SVR and the LSTM Machine Learning model were used by the authors. It was demonstrated that SVR algorithms are the most suitable in determing the result among the Machine Learning algorithms used for estimating the correct face match percentage.

IV.PROPOSED METHOD

Our proposed methodology includes the following steps:

i.   First I will collect the records of different person from the website or other sources.

ii. Then I will perform preprocess operation to extract information from the data.

iii. Then I will perform the cleaning operation to solve the problem.

iv. Then select the attribute from the given dataset.

v. The system then displays the results.
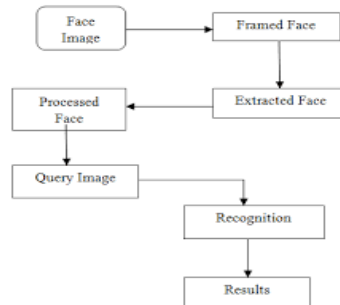
   The flowchart of the methodology is shown below:

Fig3: [Flowchart of proposed method]

Algorithm Used:

As the name suggests, we use MTCNN algorithm for predicting the result.
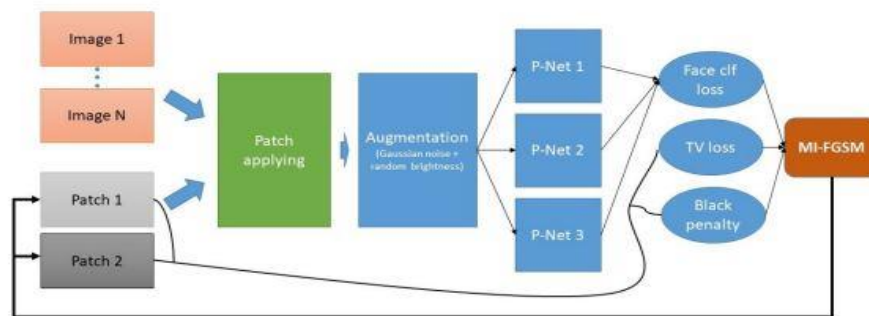

Fig4: [MTCNN Algorithm]

V.CONCLUSION

   The performances measures of the proposed methodology are discussed in detail and the major goal of this work is to detect both normal and fake images in an accurate manner. For this purpose a multi – task convolution neural network is utilized in this work. This CNN compromises four layers which were – The convolution layer, Pooling layer, Activation layer and Soft Max layer.

   The main purpose or outcome of this project is to provide air quality index to use in different organizations and sectors. The overview of this model describes that the deep learning tools help you to train your own MTCNN from scratch or use a pre trained model to conduct transfer learning. This model usually work in controlled environments and recognition algorithm can take advantage of the environmental constraints to obtain high recognition accuracy. This implies that future smart environments should use the same modalities as humans , and have approximately the same limitations. These goals now appear in reach – however , substantial research remains to be done in making person recognition technology work reliably , in widely varying conditions using information from single or multiple modalities.

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