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Real Time Object Detection using Deep Learning

Bhairavi Girhepuje[1], Mohini Bhendarkar[2], Pooja Sakhare[3], Pravisha Dhanvijay[4], Rohini Shahare[5], Prof. Sandeep Ganorka[6]
[1, 2, 3, 4, 5]*BE, Dept. of IT, IT K.D.K.C E ,Nagpur*
[6]*Faculty, Dept. Of IT , IT K.D.K.C E ,Nagpur*

Abstract: In several application of computer vision the image processing is main approach to magnify the image. Here we present yolo a new approach to detect an object many remarkable algorithm have been develop for tracking the image, including color, segmentation, size, edge and many more. However, but they have several limits and recommendation this paper is research of our implementation towords the detection of object in an unknown background using real time video processing.

I. INTRODUCTION

"OBJECT DETECTION" deals with detecting instance of certain class like humans, cars,etc. to detect an object deep learning is a technique which is easily use to evaluate scale an image it is an artificial intelligence technique that imitates working of human brain in processing of data. This technique look at various algorithm for object detection and more. This **[5]** data simply known as big data, which has brought explotation of data from every region of world. Procesing image with YOLO is a simple and straightforword technique. Our system input image is of x*y that is the size of image as it is been required. This system runs on single convolution network on the image and thresholds detection by model confidence.

To**[4]** evaluate the ability of tensor flow object detection API to solve real time problem such as traffic light detection, face detection, etc. Traditional approaches for detecting an object and classification are being replaced by deep learning to provide state of result. However this method creates various challenges.

II. LITERATURE SURVEY

You Only Look Once: Unified, Real Time Object Detection, by Joseph Redmon. There prior work is on detecting object using a regression algorithm. To get high accuracy and good prediction they have proposed YOLO algorithm in this paper [1]. Understanding of object detection based on CNN family and YOLO by Joan DU, they generally explain about the object.

In [1] to beat the technical challenge, "You Only Look Once" (YOLO) detection system has used to hurry up the accuracy has been obtained.

In [2] one in every application and benefit is that device squares measure simply obtainable with everybody in future.

In [3] works on compressive video sensing that performs bandwidth of time sampling and minimize memory for storage.

In [4] reality is that arrival of 21st century there has been improvement within detector technology and net of factor (IOT)

In [5] lookouts the real time segmentation of Arabic scripts in 2017 IEEE international symposium on circuits and systems. This paper is about object localization, they used the bonding box method of object to overcome drawback of sliding window method.

III. EXPERIMENTAL SETUP

The SSD (Single Short Detector) normally starts with a VGG (Visual Geometry Group) model, which is converted to a fully convolutional network. Then attached extra convolutional layer that helps to handle bigger object the added layer produce 19*19, 10*10, 5*5, 3*3, 1*1 feature map all this predicting bounding boxes at various scale.

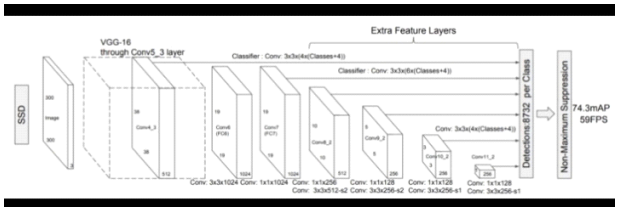

Fig. 1

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The overall working of SSD is shown in the fig 1 some of the activation are passes to subnetwork that at as localizer and classifier. We optimize for some square error in the output of our model, because it is easy to optimize align with our goal of maximizing average precision. It weight localization error equally.

IV. METHODOLOGY

Machine Learning is an application of artificial intelligence that provides ability automatically learn and improve experience

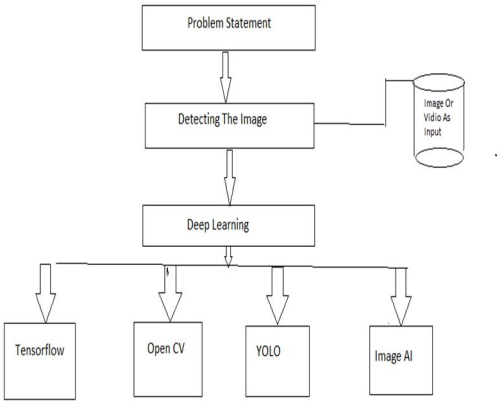

Fig.2

Deep learning is a class of maching learning algorithm that uses multiple layers to progressively extract higher level factures. The libraries are

1) *Tensor Flow:* Tensor Flow is an end-to-end open source python for machine learning it has a flexible, libraries and community resources.
2) *Open CV:* Open source computer vision (Open CV) is a Library of programming functions mainly in at real time computer vision.
3) *YOLO:* You only look once (YOLO) is a system of detecting object on the Pascal. It can recognize object at once.
4) *Image AI:* It works with digital image and videos to deduce understanding of contents.

The components of Deep Learning are

a) Python
b) Neural network
c) Yolo algorithm

Components	used
Python	High level general purpose programing langugaes used in the process of coding.
Neural network	It inspired by biological network that constitute animals brains.
Yolo algorithm	It works on the image capturing which is distributed in the various rays .

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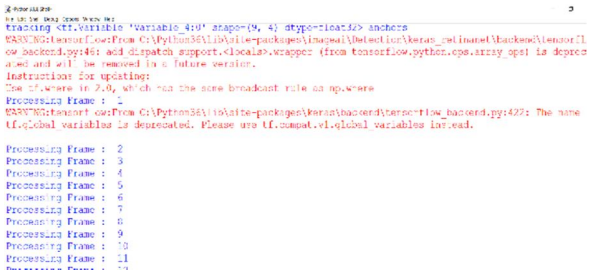
V. PROPOSED RESEARCH MODEL

Step-wise procedure Implementation for

1) Model

a) Step 1: Coded program in the python languages is been made in which particular address of the video or any input function is inserted, appropriates address is checked.

b) Step 2: While running the coded program number of frames is generated.The generation of frames totally depends upon the video as it is completed or not.



c) Step 3: Onces the generation of frames is completed the total outcome is ready that is to be shown.

VI. RESULT

The annotated data is provided in Xml format, which is read and stored into a file along with images so that reading can be faster. Also the images are resized to a fixed size to a matrix format. The model consist of base network derived from VGG net and then the modified convolutional layer for fetching and then the classifier localize network[1].This creates a DEEP NETWORK which is trained end-to-end on the dataset.

Fig.3

A. Objective Of Research Model

1) It is used for finding the factors affecting student's academic performance.
2) In addition, the projection is done for finding the student's weakness and strength in theirfield.
3) It [2] helps to decide who is doing do best can be pushed to achieve them an excellent level in every field of college.
4) On the contrary, students who are low-grade performers could be assisted to gain better achievement in their academics.
5) This research is to ensure the quality of students is another part or progress in their performance in a positive direction[1].

VII. CONCLUSION

From the literature reviewed, it is concluded that

A. The deep learning techniques can be applied for the analysis and prediction of students' academic performance
B. To identify the important attributes for detecting the object.
C. To identify the strength and weaknesses in the performing students and appropriate actions to be taken.

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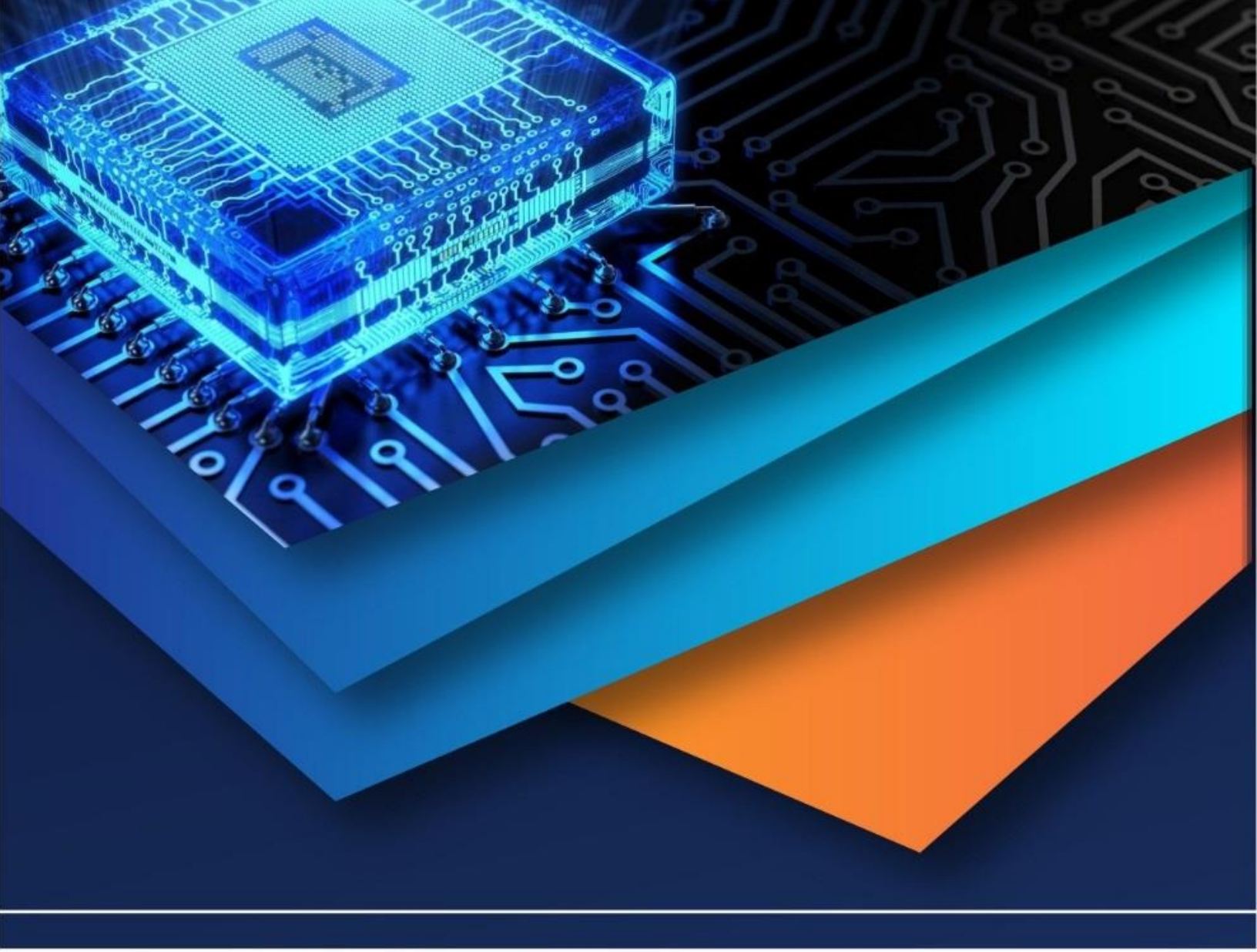

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