ONLINE ASSESSMENT BASED ON CONVOLUTIONAL NEURAL NETWORK

[1]Chandan Kumar S U,[2]Dr. M.N. Veena

[1]PG Student, Dept. of MCA, PES College of Engineering, Mandya, Karnataka
[2]Professor, Dept. of MCA, PES College of Engineering, Mandya, Karnataka

*Abstract:*Today's technology-driven measure to promote education with equity during lockdown might work for online learning and teaching, but "how could it support online examinations?", is one of the top questions now. An online examination system during COVID could be a way out. to solve these problems and build an automated examination system using Artificial Intelligence technologies to provide a way for faculties to access their students by taking an Assessment which will be way easier and more effective. In this project, we present a method to build an application program to avoid a proctor's actual presence throughout Examination by building an integrated application to generate an Artificial Intelligence enabled application to identify the malpractice in performing of the assessment. Where assessments are given on the web either through the internet or intranet utilizing the pc framework. When it comes to online exams, the proctoring procedures used provide a significant problem for the research community. The fundamental aim of the online exam is to correctly evaluate the students very well via a computerized device that saves the desired time and gives rapid and accurate outcomes. Malpractice is detected based on yaw angle variations. There are college closures and social distancing everywhere Governments across countries have initiated universities and higher education systems to adapt to remote instruction to cover lectures, exams, evaluations, and result publications. This application provides the extensive tracking of the student while taking up the exam and monitors the student automatically.Our system was tested and we could make examination tracking easy in an e-learning environment.

Index Terms - Online Assessment, Machine Learning, Convolution Neural Network, Artificial Intelligence.

I. INTRODUCTION

E-learning has grown in popularity in recent years due to its flexibility, accessibility and user friendliness. The employment of proctoring procedures is a big difficulty for the research community when it comes to online examinations. School closures and social isolation are common occurrences. Sanity is called into question. Governments around the world have begun to encourage universities and higher education systems to adopt remote instruction for lectures, exams, evaluations, and result publication.

This technology-driven measure to promote equity in education during lockdown may work for online learning and teaching, but it does not appear to be capable of supporting online exams, this is one of the most pressing issues at the moment. An online examination approach may be a viable option during this pandemic situation. In this project we propose a method to prevent the physical presence of a protocol during the entire examination by developing a full multimodal system.

This combination is fed into an intelligent inference system based on rules, can determine whether or not any inconsistencies were discovered. The facial examinations are detected and used for the extraction of feature points to estimate a head position. Yaw angle variation, background audio presence and active window capturing are used to detect unethical behavior.Our technology was tested and we could make examination tracking easy in an e-learning environment. The goal of the project is to create a comprehensive multi-modal system that will allow application software to eliminate a student during the examination.

Scope of the project is to build a comprehensive application IJCRT to generate an artificial intelligence enabled application to identify the malpractice in the performing of the assessment. This application provides the extensive tracking of the student while taking up the exam and monitors the student automatically.

II. LITERATURE SURVEY

Each Software development requires the review interaction.The current study proposes The network detector and deep learning-based behavior detector artificial intelligence (AI) (IP) solutions address the current limits of online test cheating. [1]. The Survey interaction is expected to get the necessity for the product. The Survey likewise comprises of considering the current framework and furthermore reading the instruments required for the advancement of the product. Assessment is often regarded as one of the most significant and powerful aspects of the educational process because it provides observable proof of learning, defines student performance and indicates curriculum mastery . Assessment also forms the basis for student independence and aids in development of the necessary skills for autonomous and self-directed (also lifelong) learning [2]. Despite the fact that it was no choice no alternative It has always been, and will continue to do so in the future, a viable choice during the COVID period. The polarity mapping and leveraging value is that we can maximize the advantages of any method while also guiding educators' judgments to reduce the drawbacks for the betterment of the learning process [3].The findings for peer evaluation activities were trustworthy and valid, with and without self-evaluation agreements at 0.8. [4]. The learning process has been shifting from a typical classroom to a remote exam system because of the rapid developments in ICTs in education and the breakout of COVID-19 in which social separation becomes a requirement. We focus on computer-based engagement estimations for online education, which are utilized for classifying commitment levels by a convolutional neural network (CNN)[5].Miscalculations can have serious consequences, This produced visual images of all circumstances to help pupils to understand the necessity of every calculation while building a sluice door.Repetitive solutions to comparable issues were given special attention, as research has shown that this strategy improves memory traces of relevant schemata [6]. Moreover, simultaneously, schools began to implement standardized assessment and computerized scoring technology, which made large-scale assessment more efficient and cost-effective. [7].A face recognition approach powered by convolutional neural network (CNN) and picture edge detection is presented to avoid the complicated procedure of explicit feature extraction in classic facial recognition.[8].AI would create a more impartial and comprehensive evaluation system that would evaluate students over a longer period of time and from a value-added, evidence-based perspective. Students would not be able to be tutored expressly for an AI exam because the assessment would take place 'in the background' over time, without the student being aware of it. When given the right support, AI assessment systems can show how a student deals with difficult subject matter, how they persevere, and how quickly they learn. [9].Many organizations began implementing their own E-assessment systems about that time.JISC (Joint Information System Committee) introduced principles and advice for E-assessment in England, Wales, and Northern Ireland to clarify the varied credentials regulators in the United Kingdom. [10].

III. PROPOSED MODEL

In this proposed model, we present a strategy to keep away from the actual presence of a user monitoring all through the test by making a far reaching multi modular framework. We have utilized equipment's like web-cam to catch video alongside dynamic window catch. This blend shapes the contributions to a rule based deduction framework which is able to decide if there had been any wrongdoing.Examinee's face is detected and is utilized to assess the exam by highlight focuses in this fashion analyzing a face present throughout online test. Exam coordinator will be monitoring the actions of the user for any misconduct. Thus provides safe and secure online test using AI approach.
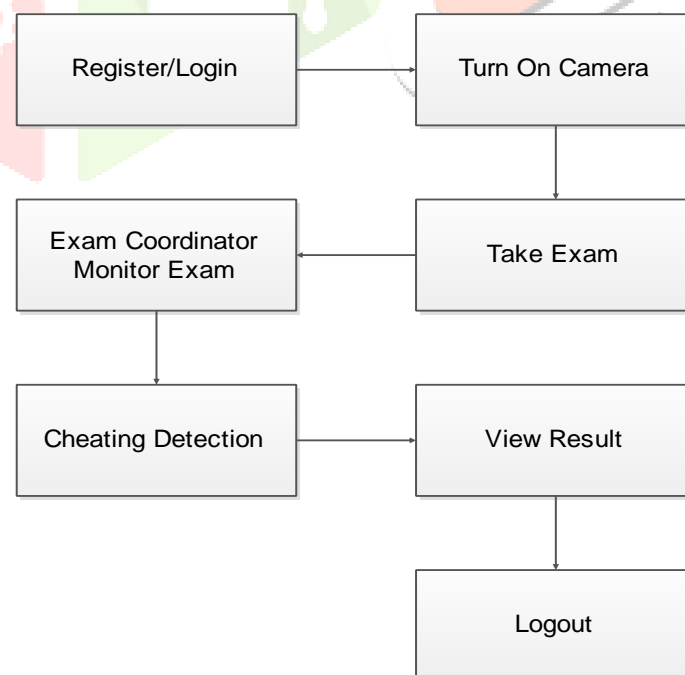

Figure 1: Proposed Model

While students taking assessment capture a frame, that frame is divided by a 5x5 matrix and that will be multiplied by a 3x3 filter matrix. It will extract the feature map. The feature map is like hair, eyes, nose, mouth, phone etc. These features will be collected as feature map. These values will be processed and compared into yolo weights. Then it will identify whether it is a person or not, and whether that person is using a cell phone or not. Yolo stands for you only live once. It uses a Convolutional neural network to provide real-time object detection.

3.1 CNN Algorithm: When it comes to Machine Learning, Artificial Neural Networks are quite effective. Artificial Neural Networks are used to perform a variety of classification tasks, such as image, audio, and word categorization. For example, for predicting the sequence of words, we use Recurrent Neural Networks, more precisely an LSTM, and for image categorization, we use Convolution Neural Networks.

A convert is a series of layers, each of which transforms one volume into another using a differentiable function.

CNN   Layers:

1. **Input Layer:** This layer holds the raw input of the picture.

2. **Convolution Layer:** It is the first step in extracting the valuable characteristics of an image. There are numerous filters in a convolution layer that execute the convolution procedure. The following 5 x 5 image, whose values are either 0 or 1, every image is considered a matrix of pixel values. There is also a 3x3 dimensional filter matrix. The filter matrix over the picture and calculate the dot product to get the convolved feature matrix.

3. **ReLU Layer:** Once the feature maps are extracted, the next step is to move them to a ReLU layer and performs an element wise operation and sets all the negative pixels to 0. It introduces non-linearity to the network and the generated output is a rectified feature map. The original image is scanned with multiple convolutions and ReLU layers for locating the Features.

4. **Pool Layer:** The main objective is to minimize the dimension of the feature map, therefore speeding up the computation, saving memory, and preventing overfit. This layer is added regularly to the covnets. The corrected function map now passes over the pooling layer to generate the pooled feature maps. In this layer, different image parts, such as corners, eyes, edges, feathers, bodies, and the beak, are identified by using various filters. The final volume would be 16x16x12 if we use a max pool with 2 x 2 filters and stride 2.
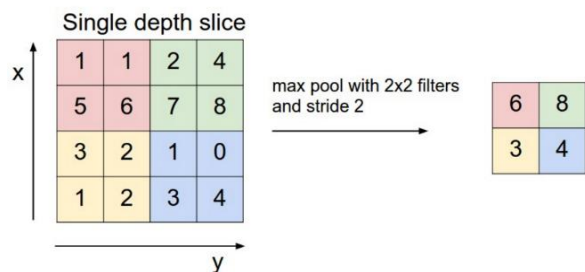
5. **Fully-Connected Layer:** This is a standard neural network layer where the input from the previous layer is collected, the class values are calculated and a 1-D array with a class number multiplied by the class numbers is shown.
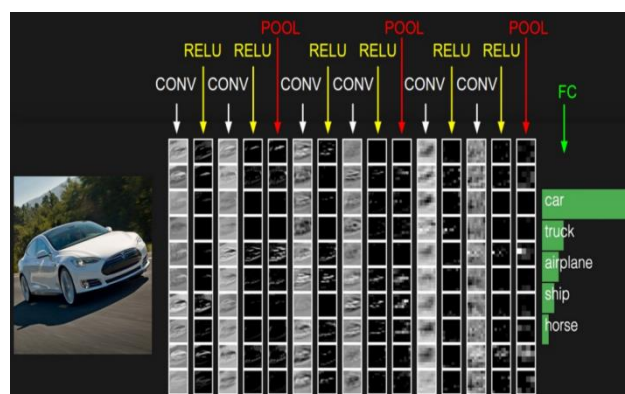

Figure 2: Identifying vehicles using CNN

IV. RESULTS AND DISCUSSION

When a student attempts to commit malpractice while taking an assessment, a warning window will display. The sample warnings to the student are shown in the figure's below. Students are advised with three warnings. If any anomalous behavior or malpractices are detected after three warnings during the assessment, the student will be terminated. All suspected behavior will be reported to the exam coordinator. Post a remark on these issues. They will take appropriate measures against certain students.
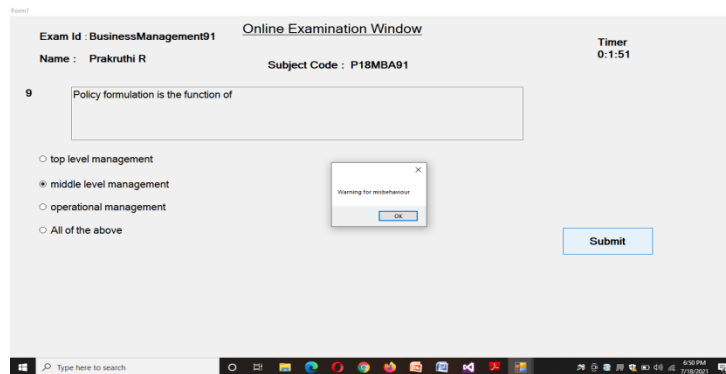

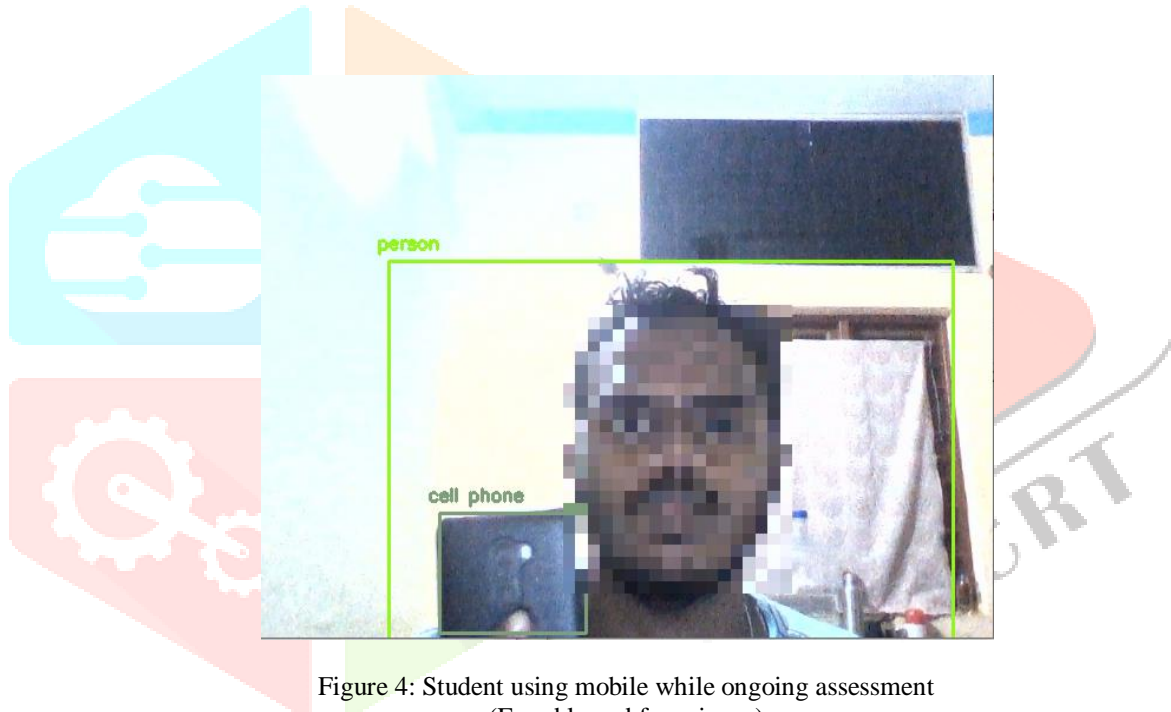Figure 3: alert the student showing the warning window

Figure 4: Student using mobile while ongoing assessment
(Face blurred for privacy)

Figure 5: Student trying to cover the web cam

Figure 6: Students discussion for ongoing assessment
(Face's are blurred for privacy)

V. CONCLUSION

This proposed system of online assessment based on CNN has a face-based analysis and it's done to fetch the user's behaviour to reduce any kind of malpractice and monitors the student automatically. No manual effort is required to track a student's behaviour during online assessment with higher efficiency and good accuracy, and also a very user-friendly interface. Thus, the users will find it very easy to work on it. Hence there is no delay in the availability of results, whenever needed.

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