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STUDENT LIVE BEHAVIOUR MONITORING IN ONLINE CLASSES USING ARTIFICAL INTELLIGENCE

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Abstract - Recently, many of them chose virtual education because of a health emergency that forced universities to stop using the center as an educational tool. By influencing the student learning process, many students became familiar with this new learning process and the use of virtual platforms became more common. Today, many education centers rely on digital tools such as Discord, Google Meet, Microsoft Team, Skype, and Zoom. The purpose of the survey is to report on the impact of student learning using the video conference tools described above. The survey was conducted on teachers and students who showed that 66% did not affect academic development. Most of them have become familiar with the platform. However, less than 24% of teachers say they have improved their academic performance, and some teachers are facing psychological difficulties with this new teaching method. In conclusion, teachers and students agree that these tools are very useful for virtual education.

1.INTRODUCTION

Analyzing human behavior is an important area of computer vision research dedicated to detecting, monitoring, and understanding human physical behavior. The cycle of education and learning can be seen as the most important process in an academic institution. During class, attendance and student behavior are closely monitored along with educational activities. The information showed that student interests are an important factor in participation and achievement. Teachers can track student activity, identify relevant indicators, and infer the student's actual involvement in the learning experience. However, in most situations people's behavior is unpredictable and very difficult to monitor, especially in large scenarios. Studies show that emotions have a significant impact on learning and performance. These emotions can be positive or negative. There are four well-known academic sentiments related to student learning: (1) Achievement sentiment contributes to the achievement and loss of achievement tasks and such practices. (2) Epistemological emotions are emotions caused by the following neurological tasks: B. The excitement of a new task. Interest in obstacles, uncertainty, anger. And the joy of overcoming problems; (3) Emotions on themes related to the topics covered in the class. (4) Social emotions are associated with school teachers and peers. B. Affection, concern, compassion, respect, contempt, jealousy, anger, or social unrest. These feelings are especially relevant to teacher- student interaction and learning in the community. Attention is an emotional mechanism of living in one part of the world, ignoring other parts. "Pay attention!" Is a phrase that is used repeatedly by so many teachers around the world for their students. Attention is the first step in the learning process.

2.LITERATURE SURVEY

1) Human Action Recognition to Human Behavior Analysis: Neziha JAOUEDI, Noureddine BOUJNAH, Oumayma HTIWICH and Med Salim BOUHLEL:

This paper proposes an approach to analyze human behavior from video. It's worth noting that a lot of information is hidden behind gestures, sudden movements, and walking speed. Much research has attempted to model and detect human behavior through motion analysis. In our work, we will explain human behavior recognition by the K-nearest neighbor method. The Gaussian mixed model algorithm is used to detect humans, and the Kalman filter is used to track moving humans using the K-nearest neighbor method. To evaluate the results, compare with other methods most used in the literature, such as SVM (Support Vector Machine) and Naive Bayesian method. All of these methods use the KTH standard, which is the same standard of human behavior.

2) Automated Classroom Monitoring With Connected Visioning System: Jian Han Lim, Eng Yeow Teh ,Ming Han Geh and Chern Hong Lim:

This paper introduced the concept of automating surveillance tasks in the classroom by applying IoT technology, connected cameras integrated with computer vision technology, and machine learning algorithms. The framework contains three main analysis modules: face recognition, motion analysis, and behavioral analytics modules. Several notable

techniques have been applied to face detection and motion analysis modules to test their robustness and obtain optimal parameters. In summary, the hybridization of Fisherman's and eigenface approaches to face recognition and the integration of upper and whole body detectors have improved the overall performance of the proposed framework. New indicators have also been proposed to help students understand student behavior in class in terms of attendance and concentration levels.

3) An Approach to Maintain Attendance using Image Processing Techniques: C.B.Yuvaraj, M.Srikanth, V.Santhosh Kumar, Y.V.Srinivasa Murthy, and Shashidhar G. Koolagudi:

The method suggested in this post is to use facial recognition and facial recognition to detect presence by image. The proposed approach was implemented in four steps. B. Face recognition, face labeling detected, classifier training based on labeled datasets, and face recognition. The database was built with positive and negative images. Hair features based on the Viola Jones method were used to recognize the face. Hair cascades have been observed to be very helpful in detecting faces with less variation in the training image set. However, to generalize the system, you need to make fine adjustments regarding the number of cameras required and the length of the video clip. A proper automated system for maintaining the system using a multimodal approach is the ultimate goal of the work.Remark: To take the attendance of student they only used face recognition technique in which the input image of a classroom is given, and faces of the given image will be detected along with their IDs.

3. RELATED WORKS

Face Recognition

Facial recognition (FR) has emerged as a new field of study with various commercial and law enforcement applications [12]. Facerecognition is the most important aspect of face recognition. It needs to be detected in a variety of applications such as defense and forensic research. This includes the complexity of various facial features, pattern representation, occlusion, aging, and appropriate strategies for identifying and understanding the clarity of either fixed image frames or video sequence images [13]. Face recognition algorithms are used to identify human faces from image or video data captured by digital cameras for identification purposes [14]. For classroom supervision, this is useful for manual assessment of student involvement [15] and student behavioral analytics [2]. There are many face recognition algorithms for extracting features of face fields. Some of the most common face recognition algorithms are eigenface recognition, fishermen's faces, and hair cascades [16]. There are other algorithms that use templates like Voila and Jones. It consists of three main ideas. Integral images, classifier training using AdaBoost, attention cascade structures [17], [18], and integral images (also known as total region tables) [19].

B.YOLO MODEL:

They are significant advances in facial recognition using deep learning techniques, and various studies have applied them to many important areas [20]. YOLO (see only once) belongs to the deep learning regression algorithm and is assigned to a one- step detector. The YOLO algorithm is a typical one-step target detection algorithm that combines classification and target regression problems with anchor boxes to result in high efficiency, flexibility, and generalization. It is very popular in the engineering field due to its backbone network, the darknet, and can be replaced by many other frameworks [21]. In addition, the YOLO series models are probably the fastest object detection algorithms with the highest detection accuracy, making them one of the most common deep object detectors in real- world applications. The real-time performance of YOLO series models has been established to be evaluated on powerful GPU cards (graphics processing units) with high performance computing capabilities [22]. YOLOV3 is an end-to-end target detection model for the new R-CNN, Fast R-CNN, and Faster R-CNN. Studies have shown that improving common target detection approaches applied to facial recognition tasks can result in better results than traditional methods. However, the above network went through a two-step detection process and was slow. Among the YOLO versions, using YOLOv3 improved the detection effect and achieved a 57.9% mAP effect within 51 ms with the COCO dataset. Therefore, the target detection field can guarantee accuracy and detection rate at the same time [23]. YOLOv3 is YOLO's latest algorithm. With enhanced object detection through deep learning [24], many researchers are applying this algorithm to a variety of areas, including vehicle target detection, real-time facial recognition [25] [26], and medical applications [27].

4. STUDY AREA AND METHODOLOGY:

Experimental Set-up: This section provides a set of experiments for test data collection, data annotation techniques, assessment of attention levels observed by annotators, and correspondence with student behavior. The experimental conditions are as follows**.**

1) The brightness of the test environment (computer laboratory) is fixed**.**

2) The size of the classroom will be determined as the degree progresses, and 15 undergraduate students consisting of 4 female and 11 male students will study.

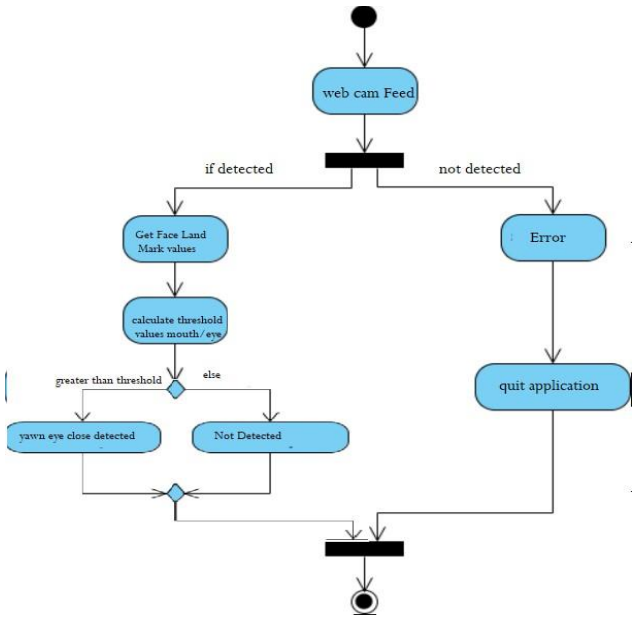
3) The camera used is a webcam directly connected to the laptop on the teacher's desk. The camera is in front of the classroom, 1.5 meters high and 40 degrees at an angle. The camera can clearly capture both the student and the entire labspace.

4) Video recordings and image captures were recorded during the session.

5. FACE RECOGNITION AND MONITORING MOVEMENTS:

The camera acted as an input device for face recognition. The created model was applied to each image from the camera. Face recognition is done with the generated model shown in each image.

Using the Landmark Model, it is recognized from the live surface and the values are collected and stored in an array variable.



6. CONCLUSIONS

A deep learning method using the YOLOv3 algorithm was used to evaluate the student'sobservable actions in the classroom teaching system. Figures it display the liveidentification of student actions based on specified scenes. The evaluation was created rightafter the live feed review. Several models have been produced. Such models were testedusing mAP to decide which model is appropriate for object detection. The mAP (mean average accuracy) is a common measure used to determine the precision of the artifacts being observed. This measure was focused on the following class: high = Attentive and low= Not Attentive. The experimental testing shows that model accuracy is 88.606%. Testsindicate that this method offers reasonable pace of identification and positive outcomes forthe measurement of student interest dependent on observable student actions in classroominstruction. The suggested approach is often versatile and responsive to different situations,since more students would be interested in greater room sizes, utilizing a higher form ofcamera with certain enhancements such as IP camera for continuously capturing images ofthe students, detect the faces in images and compare the detected faces with the database.It may be used such as greater input picture measurements, anchor box dimensions idealfor different situations and further training details.

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