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CHAPTER 1

INTRODUCTION

1.1 Introduction

According to Dr. Donald McCabe's and International Center for Academic Integrity survey and research, which has studied about the trends in dishonesty in academic for more than over a decade report that about 68% of undergraduate students admit to cheating on test of in written work. In India cheating in exam is endemic, complex and systematic. In Bihar (state of India) alone in February 2018, 1000 students were expelled from examination for cheating. The objective and purpose of this research is to design an Artificial supervisor AI based algorithm surveillance, monitor and analyzing model which will help the academic institute to identity and analyze unfair or suspicious activities during examination. The proposed system model will be able to process the real-time automated videos and using existing dataset of student and various activities will analyze the activities happening in the examination, video processing technologies and algorithms provide an optimal solution for this as this will help in pointing out an event and retrieves the relevant information from the automated video. Every institution suffers the malpractices in the examination, this model will have a robust face and activities detection algorithm that tracks every students activities in the classroom, including face movement, mouth open etc.

While this sort of system invites, multiple detection mechanisms, which could be on fronts of Face detection, Noise detection, Eyeball movement detection, change of tabs detection, Device detection and more, often one or more together could facilitate the fairness of examination and add credibility and integrity to it, apart from identity verification to avoid non-repudiation.

1.2 Existing System

- Only video camera where been available, which takes lots of time to check on each student.
- Human power is need for completion to maintain students
- There is no image detection and video monitoring in single system.
- The algorithm which was used is very basic level, that requires time cost.

- There was only motion detection
- Man power is need, which is difficult to handle everyone at the same situation.
- Should have to check on each and every student

1.2.1 Disadvantages

- The Artificial supervisor Ai based algorithm helps to give quality of student. Helps supervisor reduce their work.
- Artificial supervisor Ai based algorithm will be more active on students so students cannot cheat on exam duration also a supervisor can also find student who tried to copy during the examination.
- We can bring quality of student from everywhere and we can also understand the mentality of student by checking on them.
- This project is really helpful in exam hall and also reduces human time mostly man power.

1.3 Proposed System

- Artificial supervising Ai based algorithm which enables the image and video processing.
- This video system which enables the process of monitoring the suspicious activities of students, where this system is automated by video and image to monitor students activities during the examination in real-time.
- The artificial supervising robot will monitor students suspicious activities and sends signals through Wi-Fi (Node MCU) and this will also gives a buzzer alter when students are trying to cheat in examination.

1.3.1 Advantages

- Requirement of hardware will be more because of hardware requirement cost will be increased.
- We have to choose a right place for supervising exam hall.
- In this project we are implementing RND method so problem can be identified only after implementation of project in real time.

CHAPTER 2

LITERATURE REVIEW

2.1 Literature Survey

- i. **Ahmad Salihu Ben-Musa, Sanjay Kumar Singh, Prateek Agrawal, “Suspicious Human Activity Recognition for Video Surveillance System”, International Conference on Control, Instrumentation, Communication and Computational Technologies, Research gate, 2019.**

Many researches are emerging in the field of image processing, with advancement in technology video surveillance has wider applications and plays a key role in tracking human activities. The primary focus of a video surveillance system is to extract video sequences and then analyze the obtained information for any suspicious activities.

- ii. **Paul Viola, Michael J. Jones, “Robust real Time Face Detection”, International Journal of Computer Vision, Kluwer Academic Publishers, 2020.**

An efficient face detection framework is required which is capable of processing images extremely rapidly at high detection rates.

- iii. **Rajkiran Gottumukkal, K. VijayanAsari, “An improved face recognition technique based on modular PCA approach”, Pattern Recognition Letters 2019.**

Detection of faces and tracking facial features in video sequences is required in which, face detection is a necessary step for face recognition to identify impersonation in an examination hall.

- iv. **A.T. Awaghade, D. A. Bombe, T. R. Deshmukh and K. D. Takawane, the framework proposed incorporates all the contributions to measure and gauge the assortment of occasions, practices and examples ordinarily connected with cheating.**

By joining consistent personality check and programmed recognition of misbehavior or dubious exercises by an understudy, this framework gives a versatile, on the web, totally computerized, human communication free delegating framework that can be gotten to by test takers and directors to a really productive answer for customary issue of online test administering. The screen's webcam has an inherent receiver to catch any solid in the room. This framework additionally catches the screen captures from an understudy's machine aimlessly, an ideal opportunity to guarantee respectability. Validation of the personality of the

test takers is a significant and possibly costly issue in internet testing. In this framework, confirmation is cultivated utilizing the webcam and straightforward, solid acknowledgment methods.

- v. N.L Clarke and P. Dowland, the paper presents a feasible model to facilitate remote and electronic proctoring during examinations of students.**

The strategy involves utilizing translucent recognition to give a non- disruptive and persistent authentication of student's identity all through the period of test taking. A model is created and an appraisal of the technology of the created platform showcases the success of this method.

- vi. Sanjana Yadav and Archana Singh, they have used computer vision for information extraction for object detection.**

Computer vision can be used to carry out visual manipulation and recognition as object frames. Steps used by them are as follows, an image is captured and all the objects in the image are stored in a database or a collection. Images are taken at a regular interval which then is matched from the image which is collected in the database. If the position of the object is displaced, then it is flagged separately on similar lines. Image is processed under a matching algorithm using the methods such as rescaling, filtration and binarization. Chamfer distance transformation is used here for detection of the position of the object and map the relativity within the image. This helps us to understand that objects have been moved and similar methods can be used in detection in case of foreign objects in the frame.

CHAPTER 3

SYSTEM REQUIREMENTS

3.1 Hardware Requirement

- Node MCU.
- SD card class 10.
- 15watts adopter.
- USB camera.
- Buzzer indicator.
- Light indicator.

3.1.1 Node MCU-Hardware Requirement

The Node MCU (Node Microcontroller Unit) is open source software and hardware development environment that is built around a very inexpensive System-on-a-Chip (SoC) called the ESP 32. The ESP 32, designed and manufactured by Express if Systems, contains all crucial elements of the modern computer: CPU, RAM, networking (Wi-Fi), and even a modern operating system and SDK. However, as a chip, the ESP 32 is also hard to access and use. You have to solder wires, with the appropriate analog voltage, to its PINs for the simplest tasks such as powering it on or sending a keystroke to the “computer” on the chip. And, you have to program it in low-level machine instructions that can be interpreted by the chip hardware. While this level of integration is not a problem when the ESP 32 is used as an embedded controller chip in mass-produced electronics, it is a huge burden for hobbyists, hackers, or students who want to experiment with it in their own IOT projects.

- ✓ SD Card
- ✓ Power Connectors 15w
- ✓ USB Camera
- ✓ LCD Display

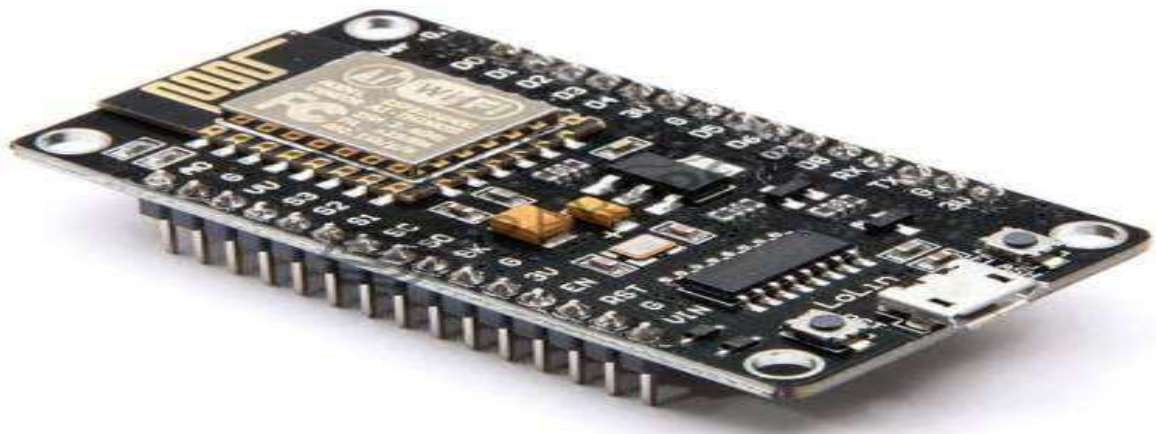


Fig 3.1 Node MCU

3.2 Software Requirements

- python 3.8 above version.
- Thonny idle.
- Computer vision library.
- yolo algorithm.
- Smtplib protocol.

3.2.1 Thonny Software

❖ An integrated development environment (IDE)

Facilitates computer programmers by integrating fundamental tools (e.g., code editor, compiler, and debugger) into a single software package. Users do not need to install the language's compiler/interpreter on their machines; an IDE provides the environment itself.

- ❖ **Thonny** is a free, dedicated IDE for Python designed for beginners.

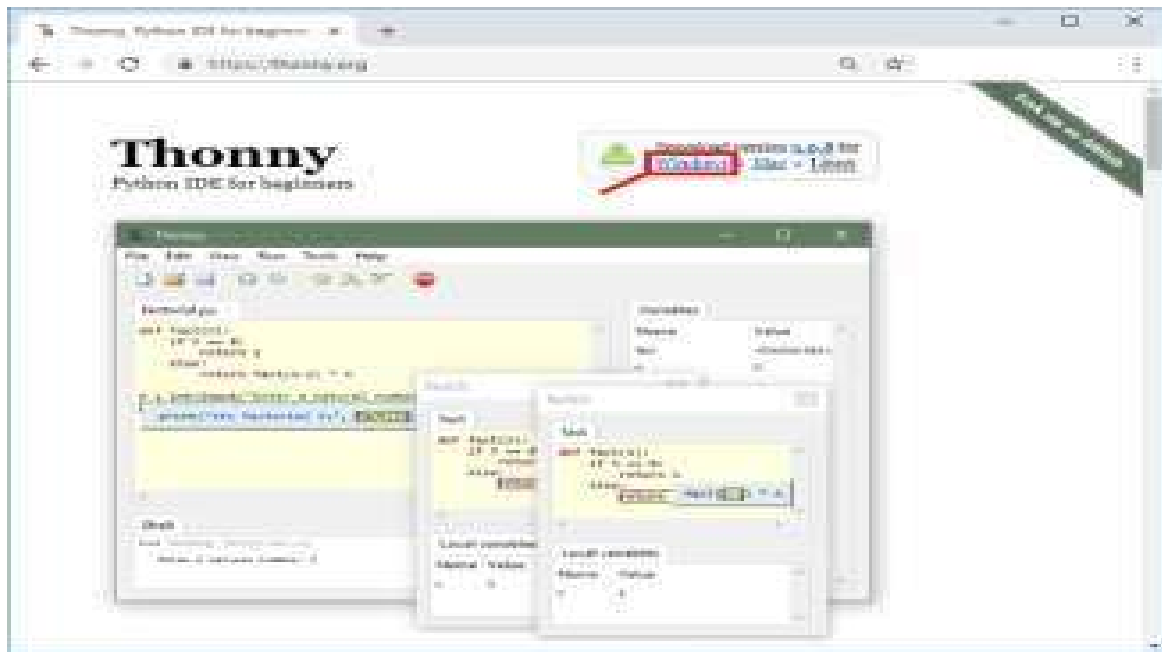


Fig 3.2 Thonny Software

3.3 Libraries and Packages

To understand machine learning. You need to have basic knowledge of python programming. In addition, there are a number of libraries and packages generally used in performing various machine learning tasks as listed below:

★ NumPy

NumPy is a python library used for working with arrays, created by Travis Oliphant. It has functions for working in domain of linear algebra, Fourier transform and Matrices. It also has advances math function and rudimentary scientific computing packages.

★ Pandas

Pandas is a high-level data manipulation tool developed by Wes McKinney, is a must for data-science. It provides fast, expensive and flexible data structures to easily work with structured and time series data.

★ MatPlot

MatPlot is a plotting library used for the python programming language and its numerical mathematics extension NumPy and its helps with data analyzing.

★ PyTorch

PyTorch is an optimized tensor library primarily used for deep learning applications using GPUs and CPUs. It is an open-source Machine Learning library for python.

★ Anaconda 3

Anaconda is a distribution of python and R programming languages for scientific computing, that aims to simplify package management.

★ Jupyter Notebook

Jupyter NoteBook is an open-source web application that allows data scientist to create and share documents that integrate live code, equations, computational output, visualizations, and other multimedia resources.

CHAPTER 4

SYSTEM DESIGN

4.1 Block Diagram

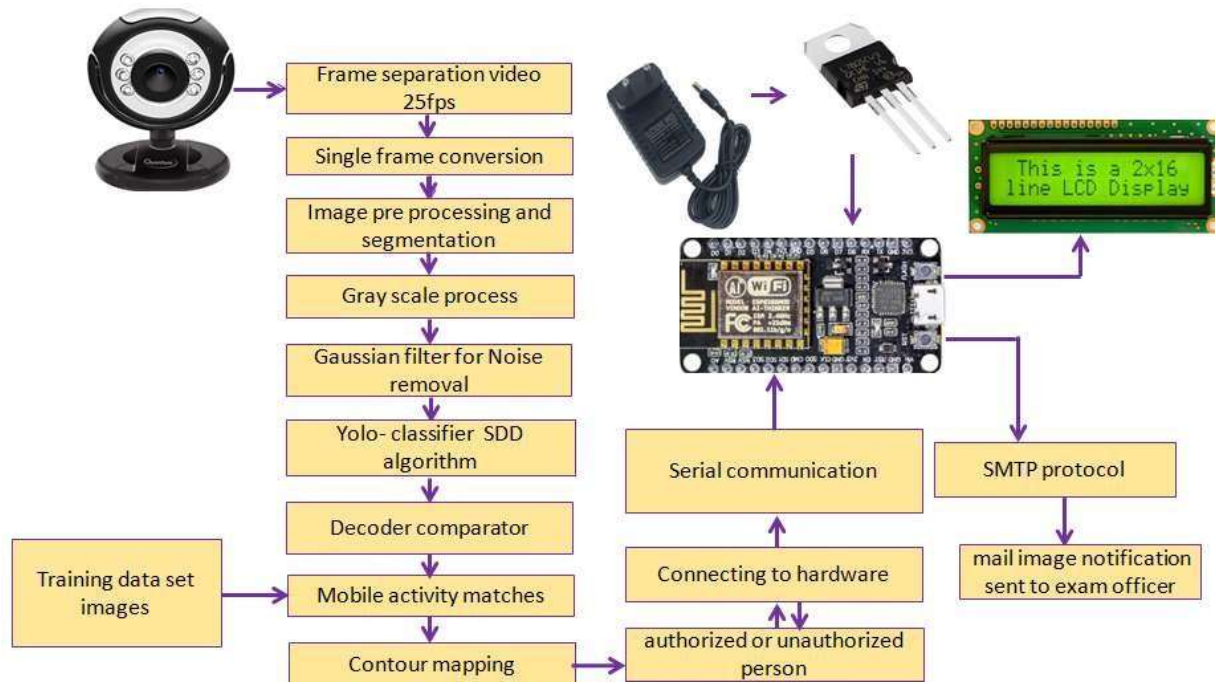


Fig 4.1 BLOCK DIAGRAM

4.2 Implementation

With this project we can bring quality of education, where we can conduct good level of exam and avoid malpractice such kinds of activities in exam hall. Student will understand the quality of education and we can bring out quality of students in every education system. By implementation this project we can develop education.

4.3 Design

This project is designed by using Node MCU and Thonny software, here the input image are trained in database, the input is preprocess here the detection of cheating student in exam hall are detected by using AI based algorithm. Input images and database images are compared with help of AI based algorithm, the images are extracted using key point descriptor.

CONCLUSION

The proposed model for detection of suspicious activities in classroom during examination is based on various computer vision algorithms. This will allow it successfully implement the system for detection of various activities during an examination. This model helps educational institutions extensively in curbing abnormal or unfair activities in the classroom. The proposed system will definitely give high accuracy and minimizes computational resources. The system model works as the framework to develop and add more activities to detect apart from one mentioned here. The Node MCU which is internet connection will send an each and every information with the buzzer alter to the exam cell department.

FUTURE SCOPE

In future we can implement this in all CCTV camera and also, we can implement this during the online exam where student can understand the real value of exam during the online and even if it offline.

REFERENCES

1. “A Design of Continuous User Verification for Online Exam Proctoring on M-Learning”, Hadian S. G. Asep; Yoanes Bandung, 2019 International Conference on Electrical Engineering and Informatics (ICEEI), 9-10 July 2019.
2. “Fraud detection in video recordings of exams using Convolutional Neural Networks”, AimanKuin, University of Amsterdam, June 20, 2018.
3. “Automated Online Exam Proctoring”, Yousef Atoum, Liping Chen, Alex X. Liu, Stephen D. H. Hsu, and Xiaoming Liu, IEEE Transactions on Multimedia, 20 January 2017.
4. “Online Exam Proctoring System”, A.T. Awaghade, D. A. Bombe, T. R. Deshmukh, K. D. Takawane, International Journal of Advance Engineering and Research Development (IJAERD) “E.T.C.W”, January -2017, e-ISSN: 2348 - 4470, print-ISSN: 2348-6406.
5. “An Image Matching and Object Recognition System using Webcam Robot”, Sanjana Yadav; Archana Singh, 2016 Fourth International Conference on Parallel, Distributed and Grid Computing (PDGC), 22-24 Dec. 2016.
6. “An Intelligent System for Online Exam Monitoring”, Swathi Prathish, Athi Narayanan S, Kamal Bijlani, 2016 International Conference on Information Science (ICIS), 12-13 Aug. 2016.
7. “One Millisecond Face Alignment with an Ensemble of Regression Trees”, Vahid Kazemi, Josephine Sullivan, 2014 IEEE Conference on Computer Vision and Pattern Recognition, 23-28 June 2014.
8. “e-Invigilator: A biometric-based supervision system for e-Assessments”, N.L Clarke, P. Dowland, S.M. Furnell International Conference on Information Society (iSociety 2013), 24-26 June 2013.
9. “Eye-gaze detection with a single WebCAM based on geometry features extraction”, Nguyen Huu Cuong; Huynh Thai Hoang, 2010 11th International Conference on Control Automation Robotics & Vision, 7-10 Dec. 2010.
10. “Face Tracking and Facial Feature Detection with a Webcam”, R. Belaroussi, M. Milgram t, The 3rd European Conference on Visual Media Production (CVMP 2006) .