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# STUDENT SLEEPY DETECTION SYSTEM WITH EYES CLOSURE AND YAWNING

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## ABSTRACT
The yawning detection system is to detect drowsiness among the students in the classroom. The detection system can detect sleeping individuals by using a web camera to obtain real-time continuous images. In the classroom for the students the camera is positioned directly towards them. alert signal will be triggered when the system detects fatigue among the students. The developed system has detects the eye, opening and closing conditions. The captured image is binaries to find the edges of the facial landmarks of the students. It varies the condition of eye the distance between two consecutive dips of the light intensity

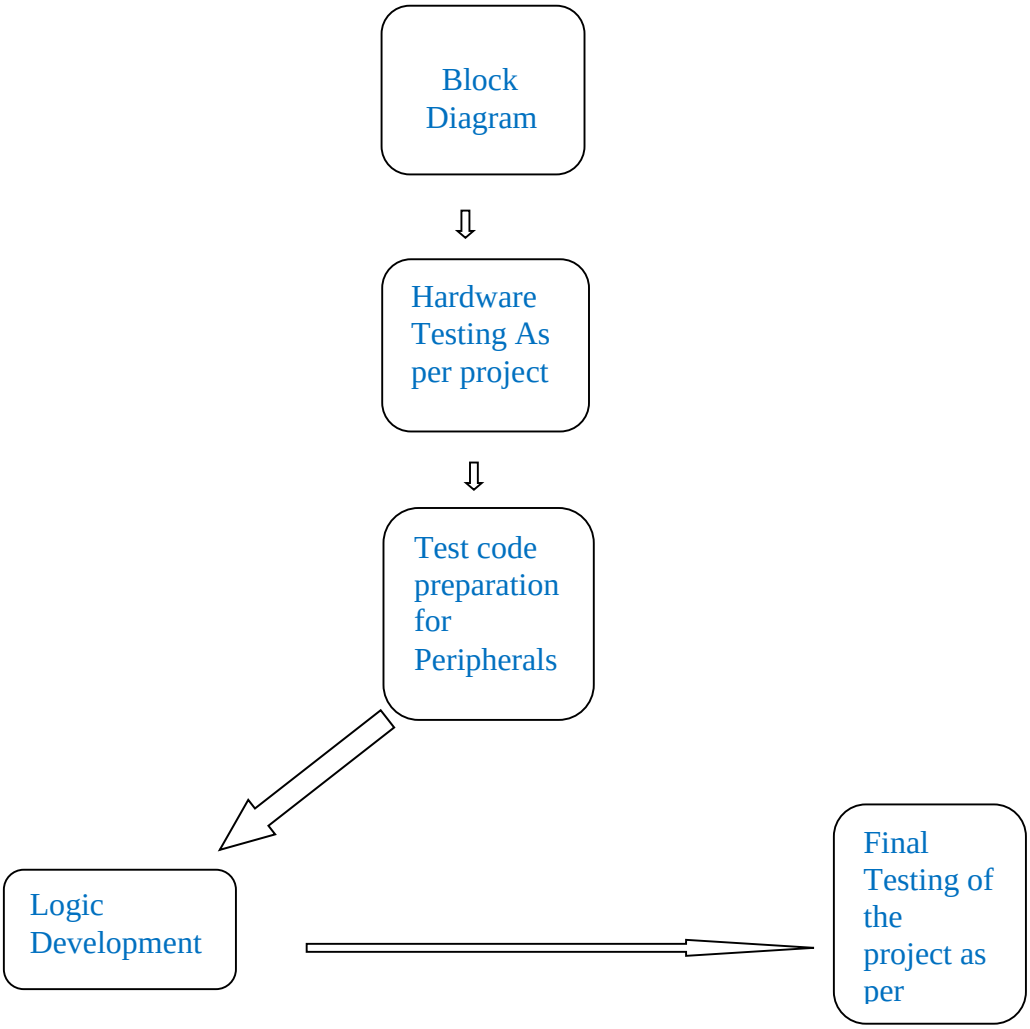
**Keywords:** Drowsiness detection, yawning, fatigue, image, facial landmarks

## INTRODUCTION
Many embedded systems have substantially different designs according to their functions and utilities. In this design, structured modular design methods are adopted and the system is mainly composed of a single micro-controller. The drowsiness detection system is important to lecturers to monitor the sleepy student in the class. The students cannot give proper attention to the teacher in the classroom[1]. Leading to the problem in the classroom, many students have been seen to be sleeping during a lecture class. The teacher might need to observe while lecturing to provide optimum learning to students. The observation in the classroom is difficult to handle, due to the limitation of lecturers at the university. The main intention is to develop a drowsiness detection system. This aids lecturer to monitor the sleepy student during a lecture in the classroom. Maximum works were related to drowsiness detection among vehicle drivers. It mainly focuses on designing a system that can monitor the open and closed state of the student's eyes in real-time[2]. The main aim is to early detect drowsiness among students in the classroom by monitoring the eyes. For this, it involves a sequence of images of the student's face and makes an observation of the eye's movements and blinks patterns. Then, this is programmed to localize the eyes of the student, which involves screening the entire image of the face and then determining the position of the eyes by a self-developed image processing algorithm. Once the position of the eyes is located by the system, it analyses and determines whether the eyes are open or closed[3]. Another objective of this work is to evaluate the performance and limitations of the system in detecting sleepy students. This is placed in the classroom in front of the student and then it will determine the student is sleepy or not.

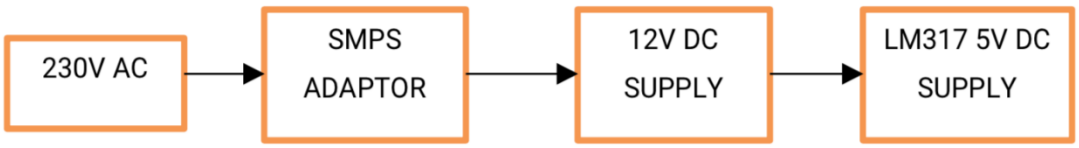
## BACKGROUND OF THE STUDY
The Image processing technique uses and attains a highly precise system in detection of sleepiness as compare to other techniques. Past over the decade, lot of researchers have worked on developing a drowsiness monitoring system that monitors the drowsy people[4]. Different types of parameters were considered in

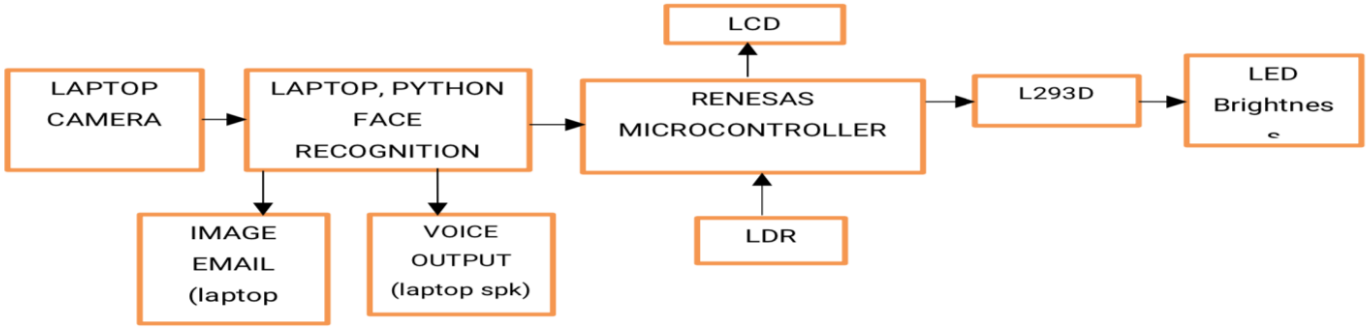
different kinds of studies like focusing to the yawning mouth. Moreover, the study recommended that to integrate much more facial features for a more detection to enhance the effectiveness of the face detection. Yawning mouth can be identified by having a yawn component and same verified it to mouth location – resulting to an performance in it's accuracy of 70% hence, the implemented model only detects front facing images. Mouth activity is commonly observed only at every 5th frame – reaching an average of 92% accuracy, the researchers suggested to make a more accurate fatigue detection system. Opening and Closing of the eyes considered as its primary condition and yawning of the mouth will be its second condition[5]. The limitation of the developed system is its low accuracy of detection if given multiple angles in terms of the student's face to the camera.

## METHODOLOGY




## BLOCK DIAGRAM






## SOFTWARE TOOLS USED

1. **Python**
2. **Open CV**
3. **Windows**


## HARDWARE REQUIREMENTS

- Computer – Processor, high speed is preferred. 32/64 - bit
- RAM 4GB
- Hard disk – Free space of 5GB
- Laptop built-in Camera
- LCD display
- LED
- LDR
- Switch mode power supply

## PROPOSED SYSTEM

This smart system will detect the drowsiness among the students in the class.The system is able to detect sleeping students individual by using a web camera to obtain the real-time continuous images. The camera is positioned directly towards the students in the classroom. It will trigger an alert signal when the system detects drowsiness among the students in the classroom[6]. The closing eye yielded greater distance value than the threshold value. Meanwhile, the open eye condition yielded shorter distance value than the threshold. Then for alert voice output will come from speaker(laptop) and alert message will send to their parents through mail. and at that time parents will take care of their child's[7].

## APPLICATIONS

- This system can be used in schools.
- This project can also have implemented in institutions

## ADVANTAGES

- It saves time.
- Manual operation has been reduced to major extent.
- Less man power required.
- Efficient distribution system.

- Easy to use.
- Efficient and reliable.
- My main motive is to eliminate the paper based records using smart phone

## DISADVANTAGES

- Carrying Power Supply

## RESULTS

Fig:Identifying Single Student Fig:Identifying Multiple Students

## CONCLUSION

The project designed by using structured modelling and also able to provide the expected results. It can be implemented successfully as a Real-Time system with few modifications.

A real-time drowsiness detection system is presented in this work. The system is capable of detecting students sleeping in the classroom. Experiments were carried out in the classroom with one target of a student at one time. The effects of light intensity and the distance of camera placement were studied. The findings conclude that the distance between the two consecutive dips of the light intensity may predict the condition of the eye. The closing eye yielded a greater distance value than the threshold value. Meanwhile, the open eye condition yielded a shorter distance value than the threshold. Since the system is limited to detect one target at a fixed position, future work is recommended[8]. This work can be improved to enhance the system to detect multiple drowsiness in various positions.

## FUTURE SCOPE

There will be always a chance to improve any kind of system as a research & development in an endless process. Same way even our system in further we can improve to identify the student facial expressions. It helps the faculty like a feedback from students with the sentiment analysis method . In future we will make it compact, cost effective and reduce in size.

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