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SmartSetGo: A Learning Management System

Jilson Correia
IT dept. SFIT SFIT
Mumbai, India

Sonali Suryawanshi
IT dept. SFITSFIT
Mumbai, India

Lisa Foss
IT dept. SFITSFIT
Mumbai, India

Magnus Lopes
IT dept. SFIT SFIT
Mumbai, India

Tanya Rodrigues
IT dept. SFIT SFIT
Mumbai, India

Abstract:- E-learning is being used nowadays in many institutes and universities and is also gaining popularity, which provides a learning platform by using information with electronic medium and technologies for communication. We can use E- learning as another alternative, such as computer-based training, online education or technology-enhanced learning and others. The purpose of creating an E-Learning Web Application is to provide an interactive self-learning online platform for everyone. Considering COVID-19 situation there is no doubt how important the online education system is, being a part of the educationsystems, we realized that there is a need for a platform where the students after us and also our fellow peers can find most of the schooling content in the same place. We bring an idea for building a web-based application that includes features like face recognition for login, Real time text editor for coding assignment and different sections for posting lecture videos, notes, assignments and a question-and-answer section, with a simple easy to understand user interface so that students can use this service.

Keywords:- *LMS, Classroom, Instructor, Student, Assignment, Lecture notes, Face-recognition.*

I. INTRODUCTION

A learning management system (LMS) is a software application for the administration, documentation, tracking, report- ing, automation and delivery of educational courses, training programs, or learning and development programs. Because of the complex online learning system that has been imposed on the students due to the pandemic situation most of the partici- pants are not able to attend the online classes and hence, was aneed of this application. As students, we noticed that there is alack of one-on-one interaction between educators and students,which causes students to lose focus and concentration. There is a need for a platform where prospective students, as well as our peers, can find most of the content, such as lecture notes, assignments, and Question and Answers sessions, all in one place. Educators have recently seen a rapid rise in web-based learning applications. [5] These Web-learning environments have made learning much more convenient by stretching the barriers of space and time. In addition to improving traditional educational methods, information technology (IT) can alsocreate new ways to deliver education and innovative teaching strategies. Teaching is no longer limited to one time and one place. With computer and communication technology, teachers and students become 4,444 learners dispersed in space and time. The time and physical boundaries of the traditional classroom are extended into learning spaces. More and more universities around the world are offering virtual curricula. Some companies also offer online training programs for their employees. A simple web search will yield hundreds of websites that offer virtual courses or resources for developing and delivering such courses. Distance education service, virtual classes by universities, online courses, and interactive learning are the few multitudes of terms that are used to describe different implementations of this technology-enabled learning space. Many learning methods, e.g., constructive, collabora- tive, and experiential, are supported. Web-based technologies have been revolutionizing education. The challenges facedin the web-based education system can be stated as internet connectivity and data usage which causes major problems likepiracy. Video streaming is another major issue faced in the e-learning industry as there is fluctuation in the bandwidth due to technical issues. Students also face challenges with adaptability as not everyone is well understood about the concept of learning outside the classroom. The basic situation that students face problems in managing all of the schooling content online, cannot be ignored. Students need a platform that can solve all of the issues like content sorting, lecture videos, assignments which will be helpful in the future. But due to the lack of resources for high network requirements,all the participants cannot attend the online education system, which creates the need for this system, which also allows the participants to get the missed content. Subsequently, Educators and Students needed to switch applications for Assignments, notes, or video Lectures, Where there is an absence of oneon one communication among educators and Students. The system includes authorized users in the e-learning websites where one share's his/her login credentials with other users which can create unauthorized access, and to prevent this we are going to implement face recognition in our system. Due to high video quality, excessive amounts of data are being used.

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II. RELATED WORK

Several papers have been referenced related to this topicin which written is [1] The author Tretinjak, M. F. has developed a Learning Management software application for the administration, documentation and delivering of electronic education to the students. The best way for to convert black- board teaching into LMS is to implement Flipped teaching (self learning via course content, readings, personal activities) which is also called as reverse engineered teaching. [2] Inthe following paper Moodle was built via cloud network for electronic lessons where teachers have the rights to edit the contents at any time. The use of web based learning system can allow them to change and design the contents and quiz very easily. [3] This paper proposes a method for predicting academic performance based on LMS data and classroom videos. Predicting student performance allows teachers to help students at risk early. The variables used in academic performance prediction studies are: pre-course variables and during the course variables. [4] This paper proposes a method of face recognition using digital camera can be used to record students attendance. Also this system introduces a automatic attendance system using CNN and Matlab. Face detection in real time when the user is using the system is implemented using matlab. [5] The effectiveness of a learning environment is primarily determined by the learning method or methods supported. To determine the relative effectiveness of different environments, educators need to examine the instructional strategies supported by these environments. After all, IT is just an enabler. What makes the difference is not the technology itself, but rather, the learning methods enabled and supported by the technology. A simple search on the Web will resultin hundreds of sites offering virtual courses or resources for developing and delivering such courses. Distance education, virtual classes, cyber courses, and interactive learning are just afew of the multitude of terms that are used to describe different implementations of this technology-enabled learning space. Multiple learning methods, e.g., constructive, collaborative, and experiential, are being supported. Web-based technologies are certainly revolutionizing education.

III. METHODOLOGY

This project aims to build a platform to help the studentsget over the traditional methods of learning and make them accustomed to the internet where the notes for their respective subjects are easily available. This system makes accessingthe lecture related material easy for the student as they don't have to search for it in one section but four different section will be made available. It will also be convenient for theteachers as they can easily keep a track of material postedand tests conducted. In this system the following features will be provided where the first section will consists of recorded lecture videos. As soon as the lecture is done the respective teacher of that particular classroom can upload the video and the student who missed out on the lecture for any reasoncan easily re-watch the lecture and catch up on the part they missed. Second section will be for lecture notes. Here the study material related to the particular topic or lab manualof the experiment that is associated with the subject will be available for the students. Third section is for assignment or tests. The teachers can post the assignment that needs to be completed by the students in this section and it will also be easy for the student to appear for it. Same goes for the testor any quiz that is posted by the teacher. Fourth section is the Question and answer section, Here the student can post their doubt related to the subject or related to the study materialthat is provided or it can be about the assignment or quiz thatis posted. As and when the teacher sees it she can clear their doubt accordingly. Fifth section will consist of a live code editor where students will be able to code, coding relatedassignment. Teachers will be able to monitor the code of a particular student through the live code editor section. Sixth section consist of Q and A. Where students can ask their doubtrelated to the particular subject and the professor will be able to clear the doubt at that particular time. To check if the same individual has signed in, face recognition is implemented in oursystem. For building face recognition in our system, the face recognition models and dlib library was used. Recognize and manipulate faces from Python or from the command line with the world's simplest face recognition library. Built using dlib'sstate-of-the-art face recognition built with deep learning. This also provides a simple face recognition command line tool thatlets you do face recognition on a folder of images from the command line! .We have also used cv2 module ,and cv2 isthe module import name for opencv-python, Unofficial pre-built CPU-only OpenCV packages for Python. The traditional OpenCV has many complicated steps involving building the module from scratch, which is unnecessary. For serializing andde-serializing, a Python object structure we have used pickle module. Any object in Python can be pickled so that it can be saved on disk. Pickling is a way to convert a python object (list, dict, etc.). Python when combined with Tkinter providesa fast and easy way to create GUI applications. Therefore we have used tkinter library for GUI .Tkinter provides a powerful object-oriented interface to the Tk GUI toolkit. The implementation of face recognition was done in python and after the successful implementation, it was collaborated with our login screen for the verification of the valid user. Set of training images were taken which will help in identifyingwhere the valid user has logged in. With the help of theface recognition teachers will also be able to see the dateand time the user logged in the system. In order to complete coding assignments, the students will have access to a realtime code sharing editor. A feedback form will be providedfor both teachers and students. Figure 1 represents the block diagram of SmartSetGo, here when the user first visits the website they will have to sign up using the face recognition. Once that is done the user will be directed to the home page where depending on whether it is a teacher or a student the classes will be displayed. For a student, they will be ableto access recorded lecture videos, notes, assignment or tests and a section where they can post their queries related to the particular topic. For a teacher, they will be given access to the classroom where they can upload the material in theirrespective section and also solve queries post in the question and answer section.

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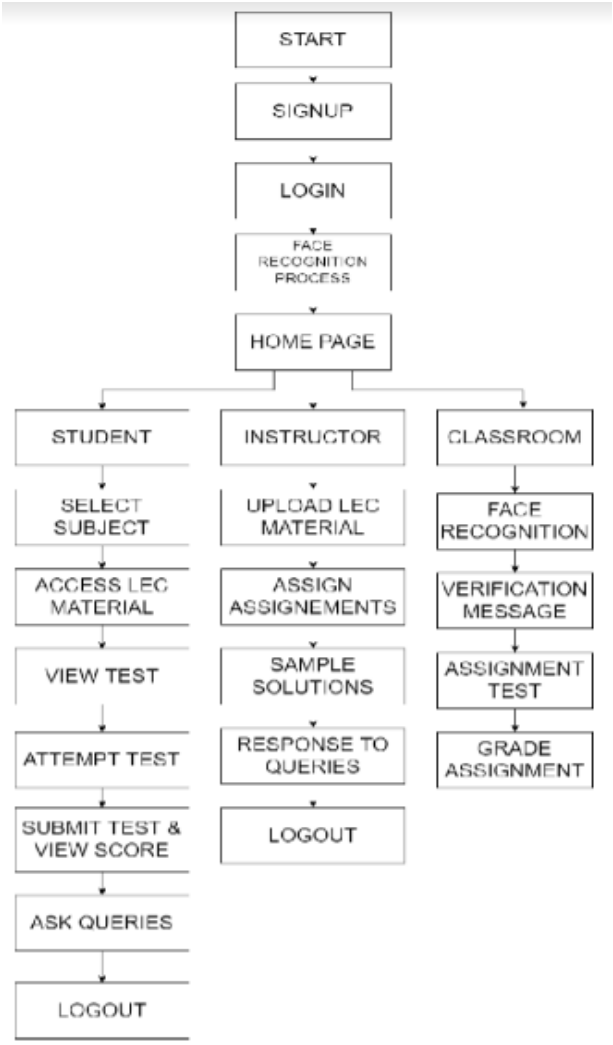

Fig. 1. Flowchart diagram for SmartSetGo

IV. RESULT AND ANALYSIS

This project focuses on building an all in one platform where there will be different sections for recorded lecture videos, notes, assignments or tests and for doubt clearing. Itis an easy to use, user-friendly web application. With the help of Facial recognition it is easy to authenticate if the same user has logged in and there is no malicious activity carried out by the users.

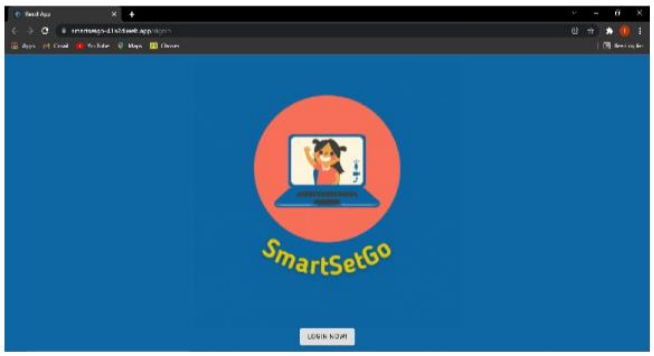

Fig. 2. Login Page for SmartSetGo

Fig. 3. Here user will register his/her face for face recognition.

The face recognition registration page is a python based face recognition system that uses OpenCV to capture images of the user during login orregistration and compares with the images in the database and authenticates the user.

Fig. 4. The user's face will be recognized based on the training images and than it will direct the user to the home page and user will be logged in

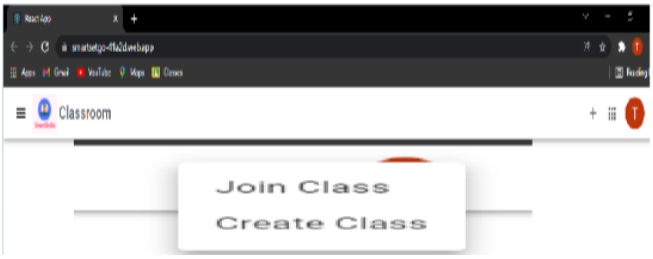

Fig. 5. This is the homepage, and from here the user can either create orjoin class.

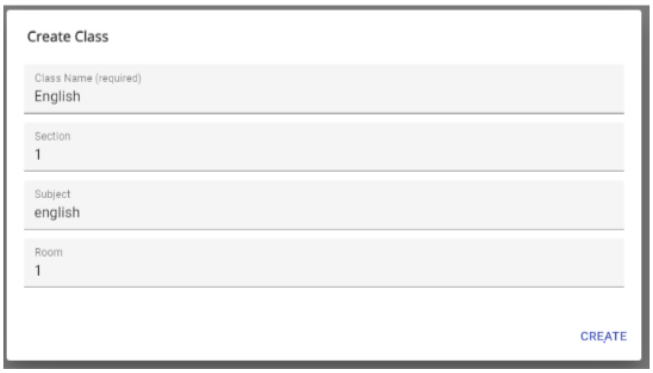

Fig. 6. Creating class

Fig. 7. After the class has been created the instructor can share the class code with the students and hence they can join the classroom using the provided code and the owners email i.e the teachers email.

The class has been created such that the content is well justified for the students and teacher to access the material with ease.

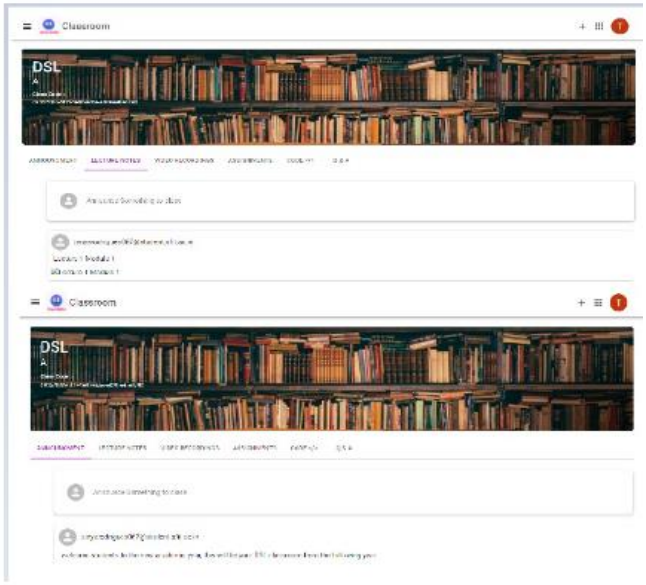

Fig. 8. In the following section announcements and lecture notes will beposted by the professor for the student to access.

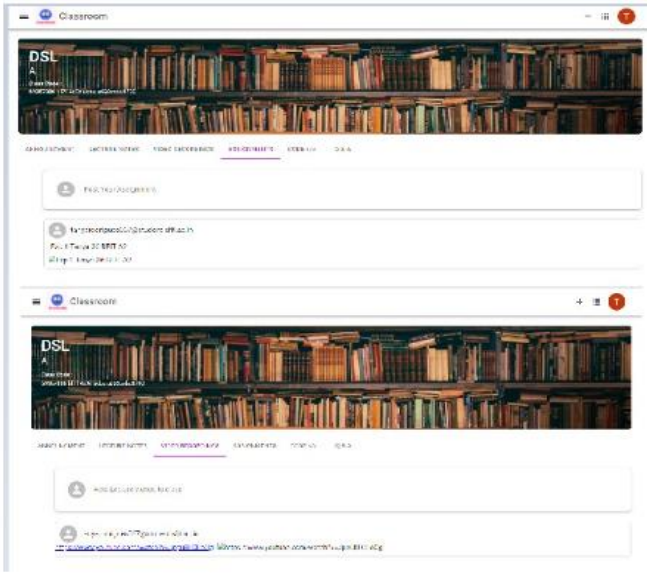

Fig. 9. In the following section assignment an video recording will be posted.student can complete quiz etc in the assignment section

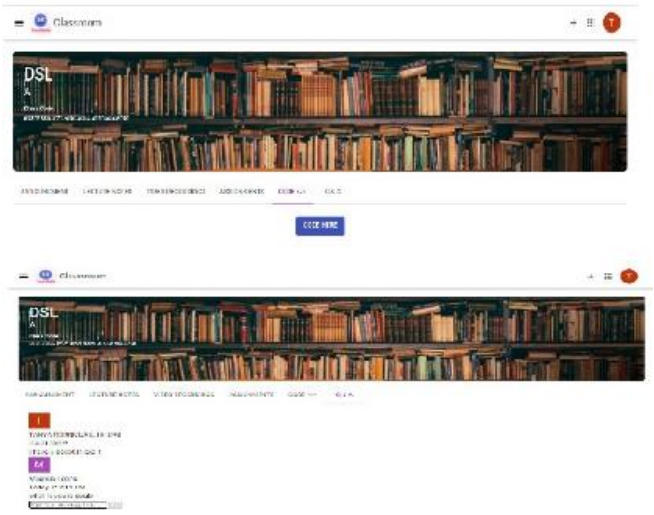

Fig. 10. In this section we have text editor where student will be able tocode different programming language and in the Q and A section teachersand students can interact by asking/ posting their queries

Fig. 11. After joining the classes instructor can upload the document or thelecture notes which can be accessible for the students

V. CONCLUSION

SmartSetGo is an application that will make the online learning system an easy to use and user-friendly way of learning. Student-teacher interaction will be enhanced, which will provide students with the opportunity to study additional topics that interest them through the materials provided by their teachers. To provide a user-friendly interface for students of all ages, is the basic objective of this project. This enhanced user interface makes it easier for students to discovercontent and saves them time and stress from having to switch between multiple applications (study material, lecture videos, assignments, etc.) The performance can be improved in severalways like reduced time for loading the web page and easy navigation of pages in single-page applications. As it is very easy to navigate to different page and filter content, end users will be more comfortable using single-page applications. The system is to make grading of programming assignments more efficient. This system will help students to improve the qualityof their code. Detailed analysis of student's performance will help teachers to guide that particular student to improve their skill. We also

provided a platform for teachers to create and monitor programming assignments.

FUTURE SCOPE

In future there will be need for a more flexible, customized style, where a more technologically oriented classroom can be developed. Students will want their educational experience to be customized to their own interests, time limits, and academic requirements. We can transform a text editor into an IDEin the future, and a chat-bot may be developed by addingmore functionality, such as the ability to reply to a particular message or query from the supplied option press Reply.

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