# Enhanced In-House Portal for UG Students

## Prof. Sunil Bhutada¹, Bysani Gnana Spoorthy², Parasa Sharon Ritika³, Rasmita Damaraju⁴

*¹Professor, Dept. of Information Technology, Sreenidhi Institute of Science and Technology, Hyderabad, Telangana, India*

*²,³,⁴U.G. Student (B.Tech.), Department of Information Technology, Sreenidhi Institute of Science and Technology, Hyderabad, Telangana, India*

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**Abstract -** *Many educational institutions have used the evolution of technology to their advantage. One such usage of this advancement is a student portal. Our college, Sreenidhi Institute of Science and Technology has had a portal since a very long time. In our project we expand the bounds of this portal by adding more functionalities to this portal. Our main focus is on adding video lectures to the portal to improve the quality of the education remotely. In addition to the video lectures, there will be a forum for the students to interact with each other and the concerned faculty to discuss about doubts and assignments. The assignments will be posted and submitted through the portal. The previous functionalities like viewing attendance and marks memos will however be retained.*

*Key Words*: University portals, student portal, professor portal, online education, video lectures.

## 1. INTRODUCTION

In this era of digital transformation, learning need not be confined to a brick and mortar classroom. It can take place beyond the four walls and beyond the school hours. Designing an online student and professor portal enables professors to upload videos, assignments and study material. The students can access the content and submit assignments remotely anytime, anywhere and on any device free of cost without the need to attend classes in person. All they need is an internet connection and their credentials to access the portal. Thus, students don't miss out on topics when they are ill or out of town. They can also replay the videos a day before the exam to revise concepts. The portal is a boon for the faculty as well because they don't have to fret about rushing through the topics anymore. They can upload the concepts on the portal if they are out of time and unable to complete the syllabus. The portal is well organized and syllabus oriented. This saves students the trouble of scouring numerous websites, YouTube videos and free tutorials. Moreover, the learning process doesn't become passive as students can watch videos, discuss with peers on forum and upload assignments.

In the present scenario, there are e-learning websites and MOOCs (Massive Open Online Courses) such as Coursera, edX, Udacity and Khan Academy. The biggest advantage of MOOCs is that they provide high quality content taught by eminent professors from renowned universities. On the downside, the topics in these websites may not be identical to those in the syllabus prescribed by the university and the

websites may charge a fee to access their content. The grades for the assignments in MOOCs are generated using AI or peer to peer reviews whereas in the portal, a Professor with expertise in his/her respective subjects grades the assignments and gives personalized feedback. Therefore, the proposed portal is a better alternative for students. Here are the two modules in our proposed portal: -

### 1.1 Student module

In the student module, the functions pertaining to the students are present. After the student logs in with the user name (University roll no.) and password, the portal displays all the courses he is enrolled in with the institution. The student can pursue whichever course interests him/her apart from the curriculum. On completion of the course work related to the subject, a course completion certificate will be awarded from the institution. There is another feature called a 'chat forum' that enables students to communicate with the faculty through text messages and clarify doubts. Using this facility students can also have subject related discussions with their peers.

All the assignments are given and submitted through the student portal. The student can check for the videos uploaded by the professor and then complete the assignments. The major advantage of the videos is that the student can complete the coursework remotely without being physically present in the campus.

### 1.2 Professor module

This module is designed for the professors to give updates to the students. Firstly, the faculty logs in with credentials. They will be able to view notifications from the HoD. A professor can handle multiple subjects. In his portal, all the subjects that he is teaching are listed. He/ She is free to design the courses adhering to the syllabus provided by the institution. Some of the functionalities provided in this part of the portal are:

1. Creation of subtopics in the subjects
2. Creation of events
3. Creation of assignments
4. Grading assignments
5. Extending the deadlines of an event/ assignment
6. Answering doubts via the chat forum

## 2. LITERATURE SURVEY

The portal for SNIST was initially built with the following functions; students as end users could check their attendance (by entering the start and the end date), view their marks memo and consolidated marks memo. Notices that were common to all the members of the institution could also be checked in the portal. Teachers as end users update the attendance and the internal marks of the students. During our internship at Virtusa where we were working on a similar concept, we came up with an idea to upload videos and assignments to make our college portal more efficient.

The paper by iBranch[3] describes how an intra-college portal can efficiently enhance the quality of learning in an educational institution. It gives the basic functionalities that have to be present in a portal for the student, teacher, management and the placement officer. It reasons with the users the advantages of using a portal instead of a channel for communication among the above parties.

According to Steven Crow [4], educational institutes have started online education a long time ago, but the advent of technology has made it possible to create tools and applications to aid the idea. He also states that educational institutions often fail to look at the long-term advantage of online education. If an institution plans to start online courses and an online curriculum, it requires tremendous amount of focus and commitment from the management to maintain the reach and quality of the material that they provide since the market for online education has a very high competition.

The portals in general contain video lectures related to the subjects that the students have enrolled, their assignments and deadlines. The website "www.coursera.org" has been one of the most famous websites that provide online certifications on diverse topics classified under 12 categories. It provides a MOOC (massive open online courses) like environment for all the users that have enrolled in their courses. The courses are taught through video lectures and periodic assessments, quizzes and assignments are given to the enrolled members to analyze them. A discussion forum is also provided for the enrolled members to interact with each other and complete the task assigned to them.

## 2. EXPERIMENTAL SETUP

The figure below shows the architecture of the portal that we would be following.
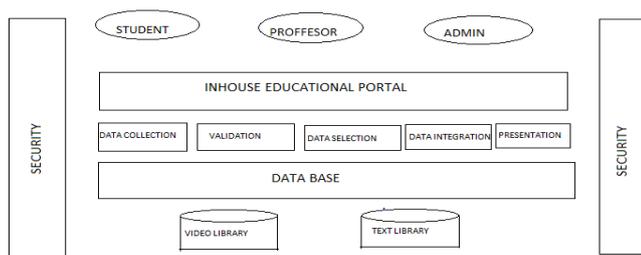


**Fig -1**: Architecture

The presentation layer contains the UI that will be displayed to the end users. The UI is user friendly and doesn't confuse the users with sophisticated appearance. The end users of this portal are mainly students, professors and the administrator.

The Application layer contains TCP/IP protocols for security purpose. Since it is the intermediate layer, it also helps in communication with the data bases. It processes the collected data and validates it. The selected data is then integrated into different modules according to the request and displayed.

The physical layer transmits the information from the databases to the next layer. It stores the heterogeneous type of data like videos and text data. Accessing data in the databases can be done through a Query language.

### 2.1 STUDENT

The students can access the web portal by giving the credentials assigned to them by the college. All the courses are listed in the home page of the student. Students can enroll into whichever course interests him/her. Students also have the liberty to enroll into courses that are not a part of their curriculum. On completion of the course work related to the subject, a course completion certificate will be awarded from the institution. The student can discuss with the faculty and their fellow students through a chat forum. The other important feature is that the students can directly write to the professors through messages.

### 2.2 PROFESSOR

Professors can login into the web portal through the credentials given to them by the institution, they can access various features. A professor can handle multiple subjects. In his account, all the subjects that he is teaching are listed. The doubts that are raised by the students can be checked in the messages section of the profile. A professor can also upload assignments and set the deadlines for submission. He can also extend or alter the dates for submission. In addition to the assignments, the professor can also update the students about the upcoming events like hackathons, presentations and seminars that might be useful.

### 2.3 ADMIN

The main functions of an admin are- registering and examining users, enforcing data security, maintaining data integrity, retrieving information that has been corrupted by some event such as unexpected system failures.

### 2.4 STUDENT-FACULTY PORTAL

All the users who want to receive the services need to login into this web portal. The web portal has access to the shared database through the internet. Database is present on cloud. Generally, the portal contains video lectures related to the subjects that the students have enrolled, their assignments, upcoming events and deadlines. It provides good interaction

between student and faculty. These facilities are beneficial to all the users.

## 2.5 DATA COLLECTION

Data Collection is a task which allows all the related datasets and data items to be gathered in systematic and structured way. Data Collection systems accept the inputs from the user then validates with the prior data stored in the database. It is important for the effective integrity of research and also implementation in future systems. In this portal students can view the uploaded video lectures. After the completion of the assignments, students upload them onto the portal.

## 2.6 VALIDATION

Every user needs to login in order to access the web portal. After the input is given by the individual it validates by checking it with the information stored in the database. Easy coding and maintenance can be achieved through this process. Validation is important as it helps in displaying information without any errors and it helps the data from being misused by invalid users. It also acts like a debugging tool in finding errors. In the Student-Faculty portal, faculty validates the courses opted by the student and also checks the assignments uploaded by the student.

## 2.7 DATA SELECTION

Data selection is where a user has to select the appropriate input data in order to perform a specific task. There are Data Selection tools that are available. Selection of data can be of any type. In this case, data relevant to the analysis is retrieved from the data collection. A student has all the courses enlisted on his portal and can choose any of them irrespective of the stream he is enrolled with in the institution.

## 2.8 DATAINTEGRATION

Data Integration involves combining data from several heterogeneous sources. This heterogeneous data is stored using various technologies to provide a unified view of them. With integrity of different data sets, data can be viewed in different ways. Data Integration tools have been used to measure the complexity of data. In this portal we can integrate different data modules like video library and text library. Since it accepts heterogeneous data types it can be used for a variety of input data.

## 2.9 PRESENTATION

Data displayed on the portal contain videos and also textual information. The UI of the portal on the faculty side has buttons which help him/her in creating events, assignments and in setting deadlines. The UI also makes it possible to design the course in the way the faculty wants it, hence making the courses more personalized reflecting their methodology of teaching.

## 2.10 DATABASE

Data base refers to a set of related data and the way it is organized. Accessing to the data stored in databases can be done through a Query language. Database servers are usually multiprocessor computers with unstinting memory and also recovery of data in case of system failures. Database is stored on Microsoft Azure (cloud). All the information related to this portal is stored on different databases.

## 2.11 VIDEO-LIBRARY

All the lectures related to the courses opted by the student will be in the form of videos. Data bases can store numerous videos. All the videos will be uploaded and updated by the faculty. Even if the student is absent, it provides facility to watch those videos hence increasing the reachability and convenience.

## 2.12 TEXT LIBRARY

All the textual information related to the portal like assignments, events and the material uploaded by the faculty are stored in the text library. Text data contains single-byte and multi byte characters. Administrators can store, retrieve, and update the values in the text library.

They use dbload or unload utilities to update or insert data into text library. This makes it very easy to read and understand the data.

## 2.13 SECURITY

This portal satisfies all the necessary security measures. Security protocols like TLS (Transport Layer Security), SSL (Secure Socket Layer) are employed to secure data. Additional cryptographic methods are used to encrypt the data during transfer and storage to prevent man in the middle attacks and attacks on the database. Only authorized users can access the portal. The user authentication information is encrypted before storing into the database. Encryption ensures the user's authentication information from being misused. This prevents attacks from inside the organization.

## 4. OUTPUT SCREENS

The following figure is a screenshot of the login page of the portal. Here, you have the latest news posted and notices that are updated regularly. The home page consists of the following tabs- About us, Academics, Departments, Faculty, Infrastructure, Placements, R&D, Students, Gallery, Clubs, etc. The login box is present to the right bottom of the home page. The user name and password are given only to the students and the faculty of the institution. No other outsider can login to the website. You can either as a student, faculty or a parent.
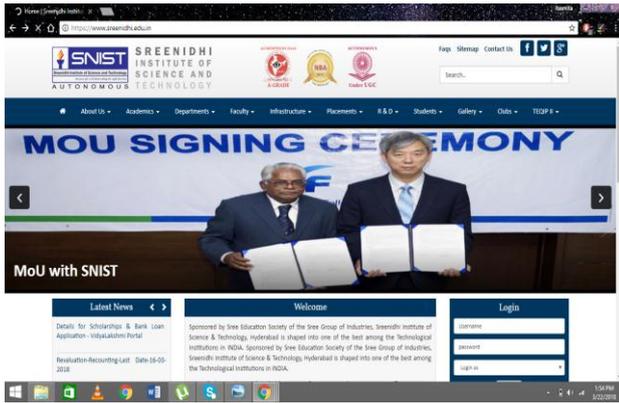
**Fig -1**: Login page

The following figure is a screenshot of one of the screens in the student faculty portal. This page appears when the faculty wants to check his messages. In addition to a discussion forum, this service makes it possible to contact the faculty directly. On the left-hand side, there is a scroll area that displays the messages according to the chronological order in which the messages were received. The professor can reply to the messages and also write his own messages to other students or to the faculty.
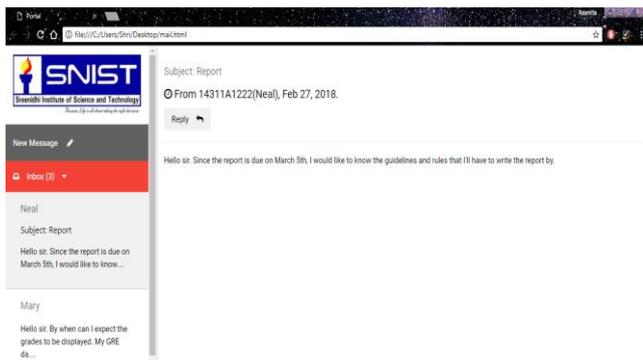


**Fig -2**: Faculty mail

This page appears after Students gets logged into the portal. The students can access the content and submit assignments remotely anytime, anywhere and on any device free of cost without the need to attend classes in person and also, they can select the Courses they are interested in. The Student can raise their doubts and can discuss paper with the faculty through a chat forum.



**Fig -3**: Student Portal

This is the screenshot our portal appears when the student wants to select the Courses. The portal displays all the Courses. Student can select any of the available courses.
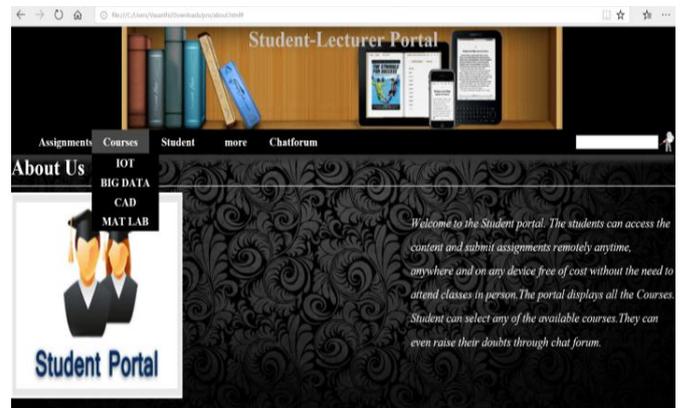


**Fig -4**: Student Portal courses

The figure below appears after the Faculty logs in with his/her username and password. The faculty can view the previous courses that they uploaded by clicking on the 'Courses' tab on the menu bar. The 'Upload new course' option in the dropdown list enables the faculty to upload a lecture video on a new course. To the right side of the faculty portal is the reminders section which consists of messages/alerts. There are other pages such as assignments, events and chat forums. These options are present on the menu bar.
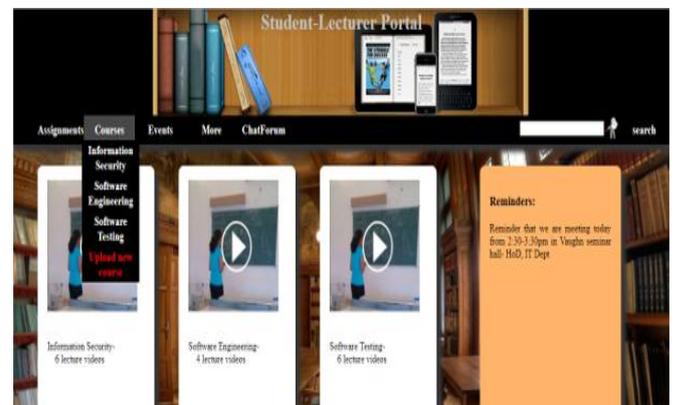


**Fig -5**: Faculty portal

## 5. CONCLUSIONS

The proposed system is compatible with the existing system and also adds more functionality to it. It is very resourceful, easy to use and secure. Features such as online video repository, online assignments grading, assignment alerts/reminders and upcoming events announcements improve the learning experience for students because they can actively explore the videos, submit assignments online, track their performance with grades and look out for events/opportunities. The portal makes completing the syllabus, grading and sharing study resources easy for the professors. It is also an effective way for students and faculty

to have one-on-one interaction. The proposed portal has been reviewed and accepted by our college management and it will be integrated with the official college website.

We are planning to pitch this idea to various other colleges in the city. Once we make an MOU, we will start working on the portal for them. We also plan on including live lectures soon. This will enable the students to attend classes from any place without actually having to be physically present in the class room. This will be advantageous to students who live far from the college campus.

## ACKNOWLEDGEMENT

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## BIOGRAPHIES

Prof. Sunil Bhutada. M.Tech.(CSE), PhD.(CSE) Professor, Dept. of Information Technology, Sreenidhi Institute of Science and Technology, Telangana, India


Ms. Bysani Gnana Spoorthy. B.Tech. (Information Technology) UG Student, Dept. of Information Technology, Sreenidhi Institute of Science and Technology, Telangana, India


Ms. Parasa Sharon Ritika. B.Tech. (Information Technology) UG Student, Dept. of Information Technology, Sreenidhi Institute of Science and Technology, Telangana, India


Ms. Rasmita Damaraju. B.Tech.(Information Technology) UG Student, Dept. of Information Technology, Sreenidhi Institute of Science and Technology, Telangana, India