Live Virtual Reality Streaming for Student Platform

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ABSTRACT: The most demanding skill of the hour is multitasking. There is growing competition in almost every market in the industry and to keep up with that growth, being able to multitask has almost become an essentiality. Being an efficient task manager calls for more time and effort, and more often than not, the work demands that we operate from different places at the same time. However, it is physically impossible to do so. Although there have been many solutions devised to be on a par with the competition, not being present at more than one location at the same time does prove to be set back in many cases. This project focuses on the problems faced by a certain sector of the people-students, and it resolves the question of handling tasks at different locations at the same time, as if we were at the location itself. This has been made possible with the help of many tools, but the most important of them all is the concept of virtual reality being implemented on a live platform. To aid this purpose various technological facilities such as Moodle software, and YouTube have been used

KEYWORDS- Virtual Reality, Moodle Software, 360 degree video

I. INTRODUCTION

The advent of technological facilities such as remote desktop sharing, facetime, skype, enables people to effectively communicate and share information with each other while being present at different places. The need to manage tasks remotely has become the need of the hour, owing to the fast-paced lifestyle that people all over the world lead. This becomes extremely essential when one wants to be able to handle tasks at multiple places, given the time constraint, in order to increase his productivity and efficiency.

Keeping this in mind, this project aims at addressing the problem that a specific but very important sector of the people-students, face. The most common issue is that, students are often seen with a bunch load of tasks that cannot be completed unless they are efficient at multitasking. Raising the issue of multitasking also brings into light another subset of the issue, which is time and location constraint. It is physically impossible to be present at multiple places at the same time, and more often than not, most tasks call for manual supervision. Therefore, the evolution of technology has been kind to the students as it has introduced features such as skype, video calling through WhatsApp, video calling through messenger, Facetime, etc.

However, such features do not provide us with the sensation of actually being present at the location because they are available only on a 2D platform. Therefore, in order to make the tiresome process of handling so many tasks a little gratifying, the rising technology graced us with the advent of the 360 degree videos equipped with virtual reality. Using this feature, we aim at bringing the lectures given at universities, to the students, on a live basis, but not just on a 2D platform, but on a 3-dimensional frame, thereby giving the student the opportunity to handle lectures as if he were physically present in the classroom, as well as simultaneously manage a handful of other tasks as well.

II. PROPOSED WORK

This paper aims at presenting a product developed to enhance the process of learning in order to make it a million times more exciting and interesting. It is built on the grounds of Virtual Reality, thereby enabling a student to be able to view the classroom lectures live, on a 360 degree basis. This will therefore give them the experience of being present in the classroom while simultaneously attending to parallel tasks. This offers many flexible and convenient features, allowing faculty and student userstomaximizetimeandefficiency.This toolgives adetailedinformation about

students and the courses. It will track the lectures currently being held while also allowing the student and the faculty to view previously recorded videos for further information.

The scope of the project is to develop a product that brings the students closer to their classrooms even when they are not physically present on their seats. This adopts the concepts of Virtual Reality, 360 degree video stitching, web designing and database integration.

This project aims at deploying a full-fledged product that authenticates the student and then displays the profile or rather the dashboard page of the student. This dashboard contains the student data such as his or her name and university ID number, along with which semester he or she belongs to. In addition to this the dashboard page will also contain the set of courses offered to the student in that semester. Now each course is a hyperlink to its own page that will display two options. The two options are as follows.

    i)   To view the lecture live
        a. If there are any live lectures taking place for that particular course then it opens the software that enables us to view videos on a 360 degree basis
        b. If there are no live lectures, then it displays the appropriate message as well the next scheduled lecture
    ii)   To view previously recorded videos
        a. We are provided with the list of videos that have been recorded from past lectures, for further reference.

III.   SOFTWARE AND HARDWARE USED

This tool has been primarily built using Moodle Technologies[5]. The user-friendly interface allows any developer to easily add, delete and modify features, to any tool. Its various facilities such as the chat rooms, allowed us to expandthe scope of the tool to make it interactive. The supporting software used are, MySQL, PHP, Wampp Server and YouTube.

The Samsung Gear 360 Action Director Manager has been used along with YouTube in order to enable live video streaming and to upload and download the video streams.

The hardware used to test this tool is the Samsung Gear 360 camera available in the market. Its compact size makes it easily portable and remarkably easy to handle. The guidelines given along with the device make the process of handling it, comprehensible even to a layman.

IV.   CONCEPT BEHIND LIVE STREAMING

The 360 degree camera is made use of during the lecture to record its nuances and store it in its immediate storage card. The videos are simultaneously uploaded on to the YouTube channel created for the particular organization, by making use of the USB port provided by the camera.

The URL for the recorded lecture will be shared via the platform created through Moodle Technologies. In this way, every student under the program gains access to the video of the lecture. The students will now be able to view the lecture at the same time as it is actually happening by making use of the YouTube Live Streaming option and using the Samsung Gear 360 Action Director Manager as the encoded software in order to view it on a 360 degree basis.

The link to the live video streaming on YouTube, as well as encoding the software to view it from a 360 degree perspective is accomplished through the tool developed using Moodle. This tool is also scalable as it enables an interactive platform by creating chat rooms within the network.

V.   SIMULATION RESULTS

The execution of the tool has been done with some dummy data in order to test its performance. The tool unwraps itself with the login page that authenticates the student or the faculty wishing to use the system. It then moves to the dashboard. The dashboard consists of details of the student, specifically the name, the university ID number, the semester that the student belongs to and the courses offered for that semester. If the user logged in is a professor then the contents of the dashboard shall be modified to display the name of the professor, the ID number and the list of courses handled by him or her, but this modification is yet to be implemented. From here, depending on the choice of the user, a particular course can be selected, which then opens the page allotted to that course. This page provides the student with two options, namely, to view a lecture currently in progress or to view a previously recorded lecture for reference. Upon selection of either of the choices, the Samsung Gear 360 Action Director Manager software pairs up with YouTube and enables the user to view the video of the lecture on a 360 degree basis on his browser, thereby propitiating the motive of the project.
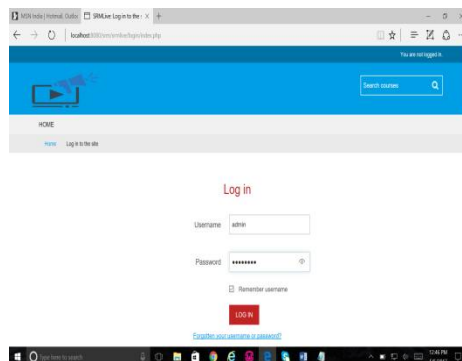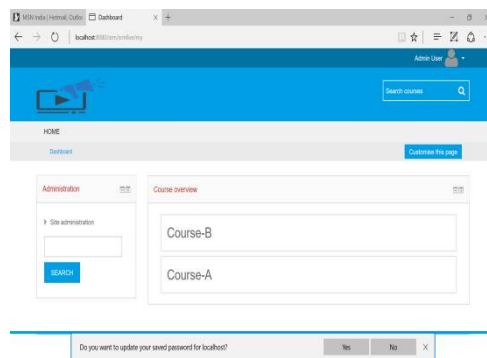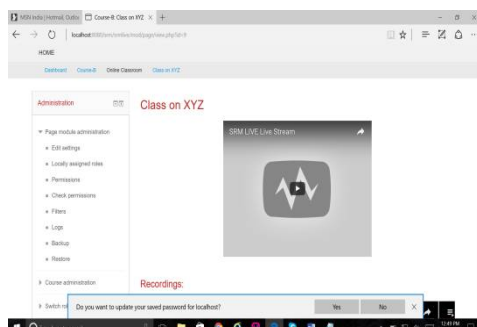

Fig. 1. Login Page

Fig. 2. Dashboard
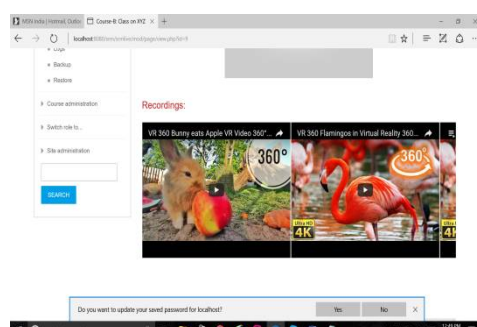
Fig. 3. Viewing live lecture for course XYZ

Fig. 4. Viewing previously recorded lectures for course XYZ

VI.   FUTURE WORK AND CONCUSION

The tool developed, is specific to the institution. It has a relatively narrower range of audience typically the students of a particular department. With the currently available resources, the application of this project has been restricted to a single classroom. However, with the rising popularity and necessity of such a tool, the features can be expanded to aid a wider set of audience, typically on a retail basis.

Furthermore, a plausible expansion could be to enable the availability of this tool on mobile platforms such as Android and iOS in order to increase the efficiency to a greater extent [7].

From a proper analysis of positive points and constraints on the component, it can be safely concluded that the product is a highly efficient GUI based component. This application is working properly and meeting to all user requirements. This component can be easily accessed by both the student and the faculty.

REFERENCES

1.   360-degree video developed by google for their YouTube products
2.   https://bitmovin.com/
3.   https://facebook360.fb.com/facebook-surround-360/
4.   https://www.umass.edu/it/support/moodle/a-guide-building-a-new-course-moodle
5.   https://docs.moodle.org/33/en/Main_page
6.   https://www.wowza.com/solutions/streaming-types/virtual-reality-and-360-degree-streaming
7.   A study of live video streaming system for mobile devices Jiushuang Wang; WeizhangZu; Jian Wang *2016 First IEEE International Conference on Computer Communication and the Internet (ICCCI)*Pages: 157-160