Sri Lanka Institute of Information Technology

Project Topic Assessment – 2019

Research Problem:

The most common teaching and learning practice adopted by many enterprises has always been a classroom with one or more instructors and learners meeting physically and in real-time. But in this teaching model, there are several drawbacks which will be addressed as problems within this research.

A classroom based learning experience means the class schedule is predetermined and not subject to change. Students must shape their personal schedules around school instead of the other way around. If plans unexpectedly change or an emergency comes up, the student cannot adjust the class schedule to turn in the work at a different time. This is one of the main problems that this research will find solutions for.

Content non-reusability is another problem that can be found in classroom learning. Memorizing or writing all the necessary content while listening to a lecture is difficult. Therefore, students might miss many important points that the lecturer is pointing out during a lecture.

Research Area:

This research spreads through several research areas.

Image Processing
Cloud Computing
Data Communication (Audio/Video Transcoding)
Business Intelligence and Analytics
Computational Linguistics

Solution proposed:

As a solution to the aforementioned problems, we propose a real-time e-learning platform. The main idea behind this solution is to provide a way to actively interact with the live lecture session for students who were unable to be present at the lecture hall. These lecture sessions will be stored in a server so that they can be accessed repeatedly at any time by students.

This solution is directly addressing the two main problems mentioned above.

At the beginning of the session, lecturer's face will be detected using robotic camera and will initiate the session by logging him/her in system. Then the camera will start to track the lecturer and follow him/her.

For the convenience, lecturer's video stream will be consisted of two separate video feeds. One will be the same feed passed to the projector while other will be from the robotic camera which is following the lecturer. Viewers can switch between the feeds as they like.

Apart from the lecturer's video feed being viewed by the students, there is the possibility for live remote students to interact with the lecturer by sharing their own video feed upon the approval of the lecturer. Students can ask questions, express their views, discuss and clarify any doubts about the lecture. To enhance the experience further, students will be given the opportunity to draw on top of any videos streams emulating a real world whiteboard.

These video streams will be segmented by the chapters in the lecture and the audio will be translated to text for the convenience of the late viewers. They can easily move through a lecture using the chapters and search for any specific keyword using the translated text and jump to that specific chapter.

This will be the system as seen by the students. But from the background, data such as actual viewed sections of any lecture for each view by a student will be collected. So, the lecturer will know which student watched which parts of the lecture and which parts they skipped, which videos received the highest/lowest view counts, which student interacted with the lecture most. This information may be filtered by module, lecture, lecturer, or student and as real-time and late views.

The system will also be capable of streaming multiple lectures simultaneously emulating an actual school/university scenario.

Technologies to be used:

Frontend : ReactJS Backend : NodeJS Database : MySQL Amazon web services for cloud services

Team Members:

Student Name	Student ID
A.M.H.B. Athapaththu	IT16131002
P.G.R.S.H. Gamlath	IT16124936
H.M.S.S. Herath	IT16132306
W.A Geeth Sameera	IT16119086

For official use only

Acceptable: YES/NO

Changes proposed:

_____

_____

_____

Any other Comments:

_____

_____

_____

Approved by CDAP Group:

Member's Name	Signature

Important:

1. According to the comments given by the panel, do the necessary modifications and get the approval by the **same panel**.
2. If the project topic is rejected, find out a new topic and inform the CDAP Group for a new topic pre-assessment.
3. A form approved by the panel must be attached to the **Project Charter Form**.