Work in Progress - Pedagogical use of Video Streaming

Oscar Martinez Bonastre\textsuperscript{1}, Antonio Peñalver Benavent\textsuperscript{1}, Joaquin López Erades\textsuperscript{2}
\textsuperscript{1}Operations Research Centre. Miguel Hernandez University (Spain).
\textsuperscript{2}Computer Engineering Faculty. Miguel Hernandez University (Spain).
E-mail: \{oscar.martinez, a.penalver, j.lopez\}@umh.es

Abstract - New real-time multimedia technologies have brought on many changes in activities, content distribution, strategies, and attitudes in the field of continuing education. In this Work in Progress (WIP), we introduce our technology innovation based on a distance learning framework. Our aim is to provide a way of understating the role of pedagogical use of video streaming and as it changes from a simple presentation tool to a focus for real-time networked learning and teaching.

Index Terms - Distance learning, real-time multimedia streaming, new technologies and assessment.

INTRODUCTION

The impact of new real-time multimedia technologies has brought on many changes in activities, content distribution, strategies, and attitudes in the field of continuing education [1]. In this context, the spectacular development of the Internet provides motivation for studying the impact of new technologies on a natural area of education like e-learning, i.e., the subset of the larger worlds of both “information technology” and “education and training” [2]. Additionally, new handheld devices like Personal Digital Assistants (PDA) are emerging as one of the most promising technologies for supporting video streaming to e-learning scenarios turning them into powerful educational units. Thus, e-learning techniques oriented towards m-learning [3] are obviously a new frontier for education becoming more widespread each year because of it can be valuable when used as a part of a well-planned and properly supported education and training environment. In this Work in Progress (WIP), we deploy our technology innovation based on a distance learning framework oriented to part-time, working or even online students. Our aim is to provide a way of understating the role of pedagogical use of video streaming and as it changes from a simple presentation tool to a focus for real-time networked learning and teaching.

OUR INITIAL APPROACH

As said before our main goal was using video streaming for pedagogical use. Therefore, initially the technology selected for video streaming was VLC (initially VideoLAN Client) [4] which is under open source agreement. VLC is a highly portable multimedia player for various audio and video formats (MPEG-1, MPEG-2, MPEG-4, DivX, mp3, Ogg, OGM, MOV, wma, wmv...) as well as DVDs, VCDs, and various streaming real-time protocols. It can also be used as a server to stream in unicast or multicast in IPv4 or IPv6 on a high-bandwidth network. As a result, after studied network resources at our university we were aimed to encourage the use of multicast technology [5] in our research for delivering educational content over the network.

Then, we prototyped an educational framework based on a system of access keys which distinguish between different user profiles (mainly, teacher and student). On entry, from the teacher side, the skeleton tool shows a personalised interface with matching courses in development allowing real-time e-lectures transmission or even recording of new pedagogical elements (essential concepts, future e-lectures, proposed labs,...) so constant updating is possible. From the student side, tool visualises subjects which student is enrolled presently. Next, student can be subscribed in order to assist a real-time e-lecture, download past e-lectures to reinforce important points or even request an interview with instructor during indicated tutorial hours.

PRELIMINARY RESULTS

We’ve applied this prototype of tele-education framework to a small set of undergraduate computing students positioned at several distant campuses inside our university. Concretely, they used laptops and PDA’s as a connection method to assist on line lectures. To achieve this goal, as depicts figure 1, we’ve modified our web page for Data Base Fundamentals subject in order to analyze assessment about their experience in this experimental course. Besides, each student took use of the tutorial hours through this video streaming framework to interact with lecturer.

Then, as showed in figure 1, student should check different color options whenever he access to this web page:

- Tutorial hours: \textit{Green} means Available so student could request an interview; \textit{Yellow} means that instructor is Busy attending to another student presently, \textit{Red} means that instructor is Not available at this time period.
- Lectures Timetable: \textit{Green} means On line, that is lecture is going on at this moment so student could subscribe to the real-time lecture; \textit{Blue} means Past lecture that is instructor is Not available at this moment.

E-mail: \{oscar.martinez, a.penalver, j.lopez\}@umh.es
Next, figures 1 and 2 show VLC snapshots that students run during this experimental course.

CONCLUSIONS AND FURTHER WORK

In this WIP, we conclude with following items (i) excellent assessment from students in this experimental course, (ii) new solutions to pedagogical use of video streaming and (iii) promoting real-time access to this video streaming educational framework from new wireless communications interface methods like PDA’s.

Further work deals with analyzing scalability and performance more deeply for the large university environment.

ACKNOWLEDGMENT

This work has been partially supported by a grant “I edición Premio Consejo Social - Innovación a la Docencia” supported by Universidad Miguel Hernández.

REFERENCES


