International Journal of Engineering and Management Research e-ISSN: 2250-0758 | p-ISSN: 2394-6962
Volume-12, Issue-6, (December 2022)
www.ijemr.net https://doi.org/10.31033/ijemr.12.6.22

# LekLink - Scheduling Lecture Links and Lecture Capture for Academics

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**ABSTRACT**

**This paper discusses the development of a lecture link and content management system that enables more specific lecture content and link management functionalities. With this software, every user can easily access their lecture links and information. The MERN stack was utilized in the creation of this system. Under the MERN Stack, we used Express.js for the back end, React.js for the front end, MongoDB as the database system, and Node.js as the testing environment for the local system development. With the assistance of Rest APIs and services, we have created the following application with enhanced performance and user interfaces that facilitate interaction with the system. The user is not required to create a separate meeting connection for material distribution in this system. As a result of implementing a service with API access points for generating lecture links, it is possible to handle everything with only a few clicks. Additionally, users can manage their recorded lecture materials using this system. With the suggested approach, any academic institution can easily manage its content.**

***Keywords*—** LekLink, Scheduling, Lecture

## I. INTRODUCTION

Although the first web-based lecture recording systems were implemented more than a decade ago, applications for recording and disseminating conferences and lectures have been developed for a considerable time and are discussed in other publications. Typically, they were developed in the context of research initiatives or to meet local demands. Hence, they are adapted to the specific needs of a particular university. These systems have lately attained a level of quality and scal ability that warrants institutions placing a strategic emphasis on lecture recording. The use of lecture recording as a major distribution channel (e.g., content for fully online or distance education courses) and a supplementary resource contributes significantly to student learning and the student experience (e.g., blended and partially online courses). As a distance education component, this type of information signals students that their peers and subject matter experts are also contributing to the learning process. The rise of electronic portfolios for teaching and learning has emphasized the benefits of lecture capture as an approach to evidence-based learning. One of the most quickly growing fields of university e-learning.

This paper compares and contrasts the viewpoints, expec tations, and behaviors of students in different lecture capture learning environments. We currently use the online content delivery management system that the university provides to evaluate the behavior of our university students here at Sri Lanka Institute of Information Technology University (SLIIT). This evaluation is also done using the content delivery manage ment system that the institution provides. Within the university, they provide online lecture links and recorded lectures under a specific module page. On this page, you will find the recorded lecture videos and the lecture notes provided by the particular lecturer in charge of that module. There are similarities between these different groups, even though a controlled experiment of this magnitude was not carried out. Students typically believe that recorded lectures include the most useful and vital educational content compared to the other sources of information to which they have access. The video of the speaker, as well as the live presentation, is recorded with the use of a technology that was developed specifically for this purpose. Because the learning management system of SLIIT, CourseWeb, made these recordings available to students, more than one thousand could actively participate in the educational process. Students in the Computer Science and Software Engineering degree program at the Sri Lanka Institute of Information Technology(SLIIT), which utilizes a blended learning paradigm, participate in the traditional lecture method. In this research article, we examined relevant works by academics at other universities. Additionally, we have explained the methodology, the proposed system we had constructed for this research, the conversation regarding this project, and the conclusion section in separate sections.

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## II. RELATED WORKS

This article compares and contrasts the viewpoints, ex pectations, and behaviors of students in different learning environments involving lecture capture. In additional papers, such as (Fried land et al., 2004), (Hurst and Deutschmann, ¨ 2006), (Hurst et al., 2006), (Mertens et al., 2007), and (H ¨ urst et ¨ al., 2007). (Ziewer, 2006). In most cases, they were developed within the context of research projects or in order to serve local demands. As a consequence, they are adapted to the specific requirements of a particular university because of this. We do our research in three different countries, each of which has a history of researching this topic, and we use three other lecture capture methods to collect and analyze the data. An online distance course called ”Introduction to Surgery Clerkship” is offered to students at the Medicine School at Tel Aviv University in Israel. This course has replaced the more traditional method of studying face-to-face. A technology tailor-made for this purpose was used to record videos and live presentations the professor gave. Because the learning management system Moodle made these recordings available to students, more than one hundred could engage in the educational process. Students from the University of Osnabruck in Germany who are taking a computer science ¨ class using a traditional lecture format and utilizing a blended learning style. We used the virtual presenter system (Mertens et al., 2007), and there were about 200 students who took part in the activity. Students at the University of Saskatchewan in Saskatchewan, Canada, studying Computer Science and Mathematics as part of a mixed cohort. A total of about seventy-nine students took part in the activity, which utilized the Recollect system. Even if a comprehensive controlled study was not carried out, there are parallels to be drawn between all of these different groups. Students frequently consider the recorded lectures the most valuable and significant educational knowledge available to them compared to other resources to which they have access.

## III. PROPOSED SYSTEM

According to the needs, we have implemented a system that helps users to overcome this situation. We have developed this system as a pilot project. This system contains the sub-features that help users overcome the problems mentioned above. With this application, we have already provided a lecturer link-generation feature that moderators can only use. After creating lectures, we can share and add those lecture details to schedules. Likewise, we can manage content delivery plans easily. With the help of the MERN stack and mention above technologies, we have provided a solution called Leklink.


**Figure 1:** Admin Panel


**Figure 2:** Daily Lecture Schedule


**Figure 3:** Lecture Link Generation Page

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**Figure 4:** Weekly Lecture Link Page

## IV. METHODOLOGY

Due to the increasing technical complexity and platform requirements, lecture link management has become extremely challenging in recent years. When it comes to the professors, they will need to go to several sites to generate lecture links. It is challenging for the students to navigate several online pages that include links to the lectures. We have devised a solution for those issues in the form of a web-based application referred to as the Lecture Link management solution. We refer to it as LekLink. By utilizing this platform, you will be able to effortlessly and without any reservations handle the contents of your academic delivery and the links to your lectures and any other materials. We planned this solution with a user interface that was very human-pleasant and features that were designed to be easy to access. Anyone can participate in their lectures by accessing this site, whether they are a student, an undergraduate, or a lecturer. Students, undergraduate students, and lecturers can simply deliver their module delivery using this program. This is a centralized tool for managing many platforms that help users save time while assisting them in performing their tasks more efficiently. To accomplish this, we will need to implement this program in a less resource intensive and user-friendly manner. For the development of this platform, we decided to use the MERN Stack and Rest API.

Regarding the technology stacks, we implemented the front end development using react and JavaScript. The web-based JavaScript framework known as React helps to speed up the loading process and create a more intuitive user interface. This front-end framework written in JavaScript is currently widely used. It is utilized by well-established businesses in addition to newly founded ones. Facebook first made the React library available to the public in 2013, and the company continues to use it extensively today.

For the back end, our team relied on the Express Javascript framework as our back end framework. Express is an online application framework written in Node Javascript and is designed to be as simple and adaptable as possible. It offers a comprehensive collection of features used in web and mobile applications. Express provides a thin layer of core web application functionalities while still allowing you to use the features of Node Javascript that you are already familiar with. After constructing the back end of the program, we needed to deploy a database to store the data sets generated by the application's back end. With the assistance of Express javascript, we are able to execute our application quite smoothly. To accomplish this, we relied on the database technology provided by the Mongo platform. MongoDB's document model is designed to be easy to learn and useful for developers while still delivering all of the capabilities necessary to handle even the most complicated requirements at any scale. They offer drivers for more than ten different languages, and users in the community have developed dozens more. A document is the equivalent of a record in MongoDB. A document is a data structure made up of field and value pairs. MongoDB documents are similar to JSON objects. Additional documents, arrays, or even arrays of documents can be included in the values of fields.

After implementing the proposed system, we needed to deploy this application locally. We have used Node Javascript as the local hosting environment to implement and deploy the developed service for hosting and testing purposes. The design of Node javascript is comparable to that of other systems, such as Ruby's Event Machine and Python's Twisted, which were important design influences. The event model is extended a little bit more by the Node javascript. It does not present an event loop in the form of a library but rather as a run-time construct. In contrast, other systems always use a blocking call when initiating the event loop. At the beginning of a script, behavior is typically defined through callbacks, and at the end of the script, a server is typically started through a blocking call such as EventMachine::run (). There is no equivalent of the start-the-event-loop call in the Node javascript programming language. After finishing the execution of the input script, the Node javascript immediately jumps into the event loop. When no more callbacks need to be executed, the Node javascript will exit the event loop. This behavior is similar to JavaScript in a browser because the event loop is not visible to the user. Node javascript treats HTTP as a first-class citizen and was developed with streaming and low latency as primary design goals. Because of this, Node javascript is an excellent choice for the underlying structure of a web library or framework.

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## V. TESTING AND RESULTS

During the course of our investigation, we have taken into consideration the real-world scenarios that are associated with our system. We have then compared our system to each of these scenarios to determine the degree to which they impact our system. The amount of time spent on each phase and the accuracy of responses were kept track.

**Figure 5:** First Test Report

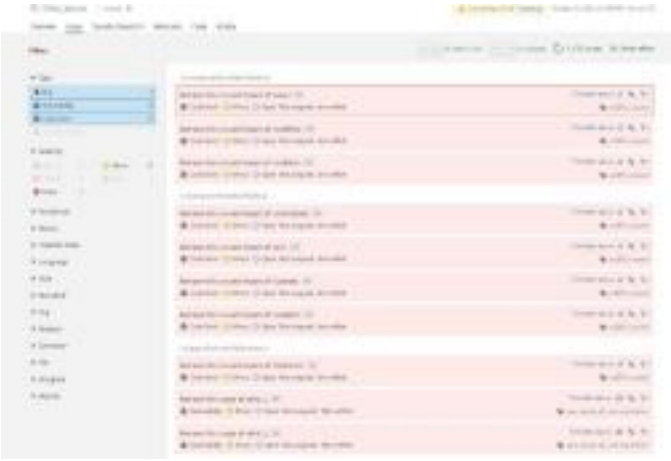

**Figure 6:** Bug Report

**Figure 7:** Final Test Report.

## VI. CONCLUSION

In this paper, we have proposed LekLink. A system will enable users to manage the lecture links by scheduling and capturing them uniquely. This system makes the user experience much more efficient and accurate simultaneously. This application will be hosted locally and, if further developed, can also be cloud-based. The main aim is to get the tasks of scheduling lecturers. etc., done easily, consuming the mini mum time and effort.

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