

Video Annotation Techniques for Micro Learning Integration in Cloud

Boomija.G¹ and Suresh Kumar.M²

¹Student, Department of Information Technology, Sri Sairam Engineering College, West Tambaram, Chennai-600 044
boomija113@gmail.com

²Associate Professor, Department of Information Technology, Sri Sairam Engineering College, West Tambaram, Chennai-600 044
sureshkumar.it@sairam.edu.in

Abstract—Advancements in distance learning As information technology progressed, advancements in distance learning resulted in a rapid increase in digital data. Currently, YouTube is the most popular platform for sharing videos around the world. There are some drawbacks, such as inactivity in online learning. This project proposes an easy way to learn through multiple terminals based on active video-based learning approaches. Video annotation, clustering analysis, and other technologies are used in the system. Because the videos are stored in the cloud, the learner can access them wherever and whenever they want. Teachers can use statistical reports to provide useful feedback, and it serves as a useful communication platform.

Index Terms— micro lecture, multiplatform, active learning, annotation, cluster analysis.

I. INTRODUCTION

Mobile phones are now used by 98.9% of the population, and 84 percent of those who have them use them to access the internet. According to Gartner, by 2021, almost all businesses will enhance the supply of corporate data through smart-phone applications, and by 2024, almost all businesses will support a workforce using tablets. Students can use a variety of platforms to study. The main point made here is that quality education can be provided through micro learning. The ability to process data has greatly increased in recent years. The micro lecture videos are short and to the point, saving the learner time. It also prevents video dragging and delaying, which causes users to lose interest. Micro learning is at its best because learners can study through the application at any time and from any location.

II. PROJECT OVERVIEW

Mobile learning (M-Learning) is a new type of learning that utilizes mobile terminal computing and wireless network transmission capabilities. Learners can obtain the information they require at any time and from any location, allowing them to achieve a true sense of autonomy in their learning. The central concept presented here is the combination of micro lecture and M-learning.

Smart phones now have data processing capabilities that are comparable to computers. Because of the rapid advancement of mobile communication technology, Wi-Fi is now available throughout most of the campus. These elements contribute to the success of an M-learning platform. The best of both worlds is achieved when

micro lectures and M-learning are combined, as learners can study fragmented knowledge at any time or place. The best of both worlds is achieved when micro lectures and M-learning are combined, as learners can study fragmented knowledge at any time or place using their mobile devices. To be effective, brief, targeted micro lectures only require mobile learning platforms.

III. RELATED WORK

These publications were investigated in terms of learning domain. At the conclusion of the study, it was discovered that micro learning holds a lot of promise for the future in terms of increasing learners' interest and motivation to learn as well as their academic success. In both formal and informal education, micro learning is used. Providing up-to-date information to users of educational regulations, funding agencies, and researchers in the field could be very informative and helpful.

Macro lecture resources from previous e-learning projects are still being used. They also provide documents for further reference, resulting in content interaction among learners.

Overcoming some of the demerits ,

i. In that video tutorial, it's difficult to ask the exact doubting position.

ii. Observational data interpretation should be improved.

iii. It required external storage to store and replay the downloaded videos.

iv. It was primarily concerned with learner-content interactions rather than learner-social interactions.

As a result, students were frequently prevented from participating in the recording and editing processes, which traditionally required more effort and were costly.

IV. LITERATURE SURVEY

A. A Social Cognitive Self-Regulated Academic Learning

This definition emphasizes the importance of three factors: self-learning, student self-efficacy, and commitment to academic goals.

Exams and quizzes required students to recognize information despite the fact that they were not permitted to consult their textbooks.

B. Social Presence In Online Discussion For Academics

The ability of students to interact socially with an online learning community is defined by their social presence. A multiple regression analysis revealed significant predictors that were difficult to deal with.

C. The Measurement Of Learners' Self- Regulated Meta cognitive Processes

In order to cope with rising class sizes, educators began to rely more heavily on computer-based learning. Hypertext, hypermedia, intelligent tutoring systems (ITS), virtual worlds, simulations, and other technologies that use technology to deliver instructions are all included.

D. Bridging The Gap From Knowledge To Action

This paper describes the progress made in extracting data from the Management System and converting it into an EWS for academic mentors. They concentrate on the importance of mentors and advisors in learning analytics-based interventions designed for higher education. Its goal is to improve student academic success and retention.

V. PROPOSED TECHNOLOGY

The proposed system makes use of a Lucene -based full-text search engine. When the search word does not exactly match the database, full-text search resolves the failed lookup situation. Furthermore, full-text search performs better than simple query search.

The platform creates a database index for the video resources using Lucene, then segments the search key text into words. It then reads the index and performs an advanced search for the index keywords using Lucene.

The terminal platform calculates the appropriate quality of video resources in the cloud using a cluster analysis algorithm, and then intelligently pushes the results to the learner's interface. To improve the learners' recall ratio and search precision, the central Web server uses Lucene technology to index micro lecture resources.

A. Modules

- Account registration

- Account type
- Video upload
- Video search
- Video annotation
- Post question & answer
- Video annotation & alert
- Database Storage
- Hosting in Cloud Environment

VI. WORKING PRINCIPLE

The student terminal, the teacher terminal, and the Cloud environment make up the micro lecture system. Web platforms are used by teachers and students to log in. Additional features include video annotation technology, video and correlate label text display, and Lucene full-text search technology, in addition to general functions like video upload and playback.

Micro lecture resources are available in three levels: basic, intermediate, and advanced.

They can annotate videos and ask questions as they learn. Teachers are notified via email when students ask questions, and they can respond via the interactive platform. This platform employs a cluster analysis algorithm to determine the appropriate quality of cloud-based video resources before intelligently pushing the results to the learner's interface.

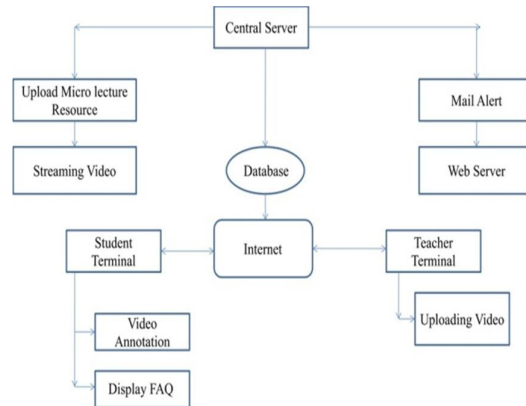


Figure 1. Architectural Diagram

A. Mechanism

The institution provided both the teacher and the student with a User ID and password. The server kept track of both the teacher's and students' profiles. The student and teacher homepages are identical. The videos are displayed after the Menu button, search bar, and advanced search button on the homepage.

Micro lecture resources can be uploaded to the central server by teachers. The teacher will select the appropriate subject, unit, and topic before uploading the video to the server. The system will automatically detect the teachers' department from the teacher profile. The students who are currently studying the subjects will receive the video that has been uploaded. When a video is uploaded in one of their subjects, students will receive a push notification. The students will receive a notification from the server once the video has been uploaded. Students can watch the video and pause or play it in its entirety. The students will pose the question to the teachers at the same time that they feel a doubt or need for clarification has arisen.

When students click the video, they will receive an alert, the video will be automatically paused, and a text box will open for them to ask questions and voice their concerns to the teachers. Students will receive notification from the server once the questions have been uploaded, and they will be able to see when the questions were raised as well as what types of questions were already asked by other students. When the staff uploads the answers to the server, the students will receive a notification from the server, and they will be able to view the answers via email and when they log into the system.

Similarly, after the students have submitted their questions to the server, the teachers will receive a notification from the server, and they will be able to access the questions in their inbox, as well as begin playing the video from which they have posed the questions, once they have logged into the system. Since this method saves the user's time and energy by not requiring them to watch the entire video at once or any time the question is asked.

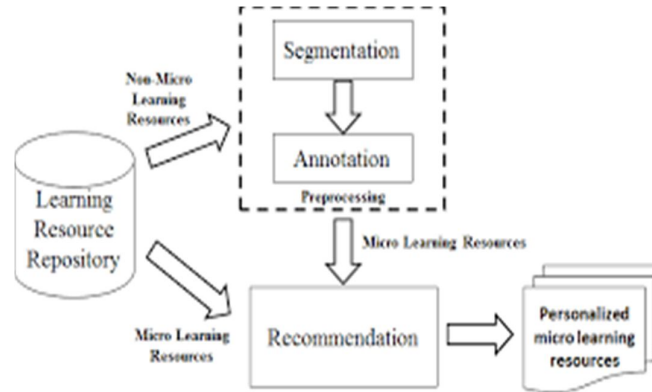


Figure 2. Micro services Representation

VII. TECHNICAL APPROACH

The web application is hosted in the AWS Cloud in this article. Amazon Web Services (AWS) is a cloud computing platform that helps companies grow by providing compute resources, database storage, content distribution, and other functionalities. Using a Content Delivery Network, which is used to instantly deliver static and dynamic files all over the world (CDN). There are cloud-based virtual machines for which you have full control of the operating system. You are free to run whatever you want in them. This is for you if you have no previous experience with AWS. It deploys and manages the computing, storage, and networking resources needed to run your applications automatically.

A. Lucene Search Engine Algorithm

Lucene is a Java full-text search library that makes it simple to integrate search into an application or website. It accomplishes this by incorporating material into a full-text index. It then allows you to run queries against this index, returning results sorted by relevance to the query or by an arbitrary field such as the last updated date of a text. Content for Lucene can come from a variety of places, like a SQL/No SQL database, a file system, or even websites.

B. Cluster Analysis Algorithm

Identifying groups of people or things that are similar but separate from people in other groups may be mentally stimulating, financially rewarding, or both. Cluster analysis, like discriminate analysis, factor analysis, and regression, does not apply to a specific statistical approach or model. You don't often have to make assumptions about the data's underlying distribution. Cluster analysis may also be used to construct clusters of associated variables, similar to factor analysis.

VIII. CONCLUSION

The ultimate goal is to deliver high-quality education through micro learning. It analyses popularity using data mining techniques such as cluster, then intelligently moves the results to learners, making the platform proactive and knowledgeable.

A. Future Enhancements

Micro learning strengthens a learner's ability to link, interact, and collaborate. Over the past three years, research and development have been ongoing, and many students have tried these methods and contributed to their development. It is now a part of the workplace training experience, not just for schools and universities. It's an excellent source of reference material for students who find themselves in a new situation. E-learning has reached its pinnacle thanks to the increased use of digital notes and online materials. The transition to cloud

computing and online classrooms would certainly give education new meaning and open up new opportunities for learning strategies.

REFERENCES

- [1] Integrating micro-learning content in traditional e-learning platforms Rebeca P. D'íaz Redondo1 · Manuel Caeiro Rodríguez1 · Juan Jose López Escobar · 1 · Ana Fernandez Vilas ,September,2020.
- [2] Deelman, Singh, G., Livny, M., et al. "The cost of doing science on the cloud: the montage example," In: 2017 ACM/IEEE Conference on Supercomputing (SC 2017), Piscataway,NJ, USA, 2017.
- [3] Zhang Guoli, Liu Wanjun. "The Applied Research of Cloud Computing Platform Architecture In the E-Learning Area," Computer and Automation Engineering (ICCAE), 2018.
- [4] R. Buyya, C.S. Yeo, and S. Venugopal. Market-oriented cloud computing: Vision, hype, and reality for delivering it services as computing utilities, High Performance Computing and Communications, 2016,HPCC'16 10th IEEE, 2016.
- [5] Richard K. Lomotey and Ralph Deters," Middleware-Layer for Authenticating Mobile Consumers of Amazon S3 Data" 2014 IEEE International Conference on Cloud Engineering.
- [6] Hobin Yoon, Ada Gavrilovska, Karsten Schwan, Jim Donahue," Interactive Use of Cloud Services: Amazon SQS and S3" 2015 IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing.
- [7] Pardo, R. A. Ellis, and R. A. Calvo, "Combining Observational and Experiential Data to Inform the Redesign of Learning Activities," in International Conference on Learning Analytics and Knowledge, Poughkeepsie, NY, USA, 2015, pp. 305-309.
- [8] S. Joksimović, D. Gasevic, V. Kovanović, B. E. Riecke, and M. Hatala, "Social presence in online discussion as a process predictor of academic performance," Journal of Computer Assisted Learning, 2015.
- [9] R. Azevedo, D. C. Moos, A. M. Johnson, and A. D. Chauncey, "Measuring Cognitive and MetacognitiveRegulatory Processes during Hypermedia Learning: Issues and Challenges," Educational Psychologist, vol. 45, no. 4, pp. 210-223, 2011.