Video Summarization on E- Learning Platform using Artificial Neural Network

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ABSTRACTE- Learning platform's is far emerged to fulfil the thirst of missing knowledge, and provides ease of understanding a concept in short period of time. The E learning platform can be accessed universally via server setup allocated with static IP and domain configured using the MX record. Thus, it creates an accessibility to share knowledge across globe. After years of important research people from various enterprise are still trying summarize content, Here this paper illustrates working model of Summarization performed by NLTK tokenizer. This paper concentrates the efforts on Collaborating the Summarization model with E-learning platform. The Artificial Neural Network utilizes sparse autoencoder for voice recognition. Flex Based system underpins ideal utilization of the technology in learning field and also helps individual suffering from dyslexia overcomes the fear of learning new paradigm. Peer groups can utilize the technology of E-learning by portraying the lecture in large screen as this may reduce the effort required by instructor to teach the same for large group in different sessions consistently. The application provides 24x7 support for discussion about topics listed under each chapter

KEY WORDS: NLTK, E-learning, Django, Python, Summarization, Tokenizer, Modules, Modals .MP4 ,mkv

INTRODUCTION

E-learning is classified as Synchronous and Asynchronous platforms. Synchronous is the type of platform where student and teacher get online at the same time and content is delivered to the peer group, Whereas Asynchronous is a platform where recorded content is shared to the peer this content stored in Asynchronous learning is served for ever to the peer and reviewed when needed. The platform developed is Asynchronous with support to Summarization to the mp4 file uploaded by the professors. The applied platform can be integrated with WYSIWYG text editor. E-learning platform in Institution can gear up the intellectuality and uptake understanding of concepts which is helpful for students with average grasping power during class hours. This aim in providing education to the working professionals who are unable to enrol into regular programmes for Master Degree. This is eco-friendly at the same time as this removes the obligatory to take notes in the paper/notebook. The students have thirst to revise the topics but have very limited time to cover the concepts. NLTK is used to summarizes the content in the video lectures using corpus and tokenizer It counters and analyses the frequency of terms and determines the priority of content.

This setup can be used in institutions and enterprise for training the freshers under trainers. This gives the opportunity for people undertaking distant education to learn the concept. This is eco-friendly as the content can be viewed again and again and may not need to buy books for the same. The biggest advantage of e-learning platform is its ability to cover distances. For an organization that is spread over numerous areas, conventional preparing turns into an imperative. The significant favourable position is the consistency that e-learning gives. e-learning is self-guided, and learning is done at the student's pace. The substance can be rehashed until it is comprehended by the learner. It very well may be made convincing and intriguing with sight and sound, and the learner can be given different learning ways relying upon his or her needs.. Social Interactivity Students can contribute the ideas between peers

OBJECTIVE:

The main objective of this project is to provide a standalone interface between Instructors and students and therefore improve the quality of e learning system within an institution. Usage of local server can preserve bandwidth and cut the cost of internet bills. Thus, summarization helps reduce the total time used by videos

EXISTING SYSTEM

Enterprise level application, focus more on paid courses and still lacks the feature of summarization. And sharing content from other sources are prohibited for the same. Thus an remotely setup server may / may not be accessible.

PROPOSED SYSTEM

In proposed system 3 tier level users can utilize the resource
❖ As Administrator
❖ As Professor
❖ As Student
Administrator:
The Superuser has the ability to add or remove user profile from Application, Reset profile credentials
Professor:
User Professor can perform operations like Adding / Removing course and modify its content
Student:
Will have the ability to read content

## PROBLEM STATEMENT

In achieving a more motivating courseware, courseware designers have began to add innovative presentation such as simulations, storytelling and various unique traits into the materials. E-learning similitude with classroom condition whereby both of the students and the teachers are as one identified with the basic course plan and flow whereas for modern workflow key component of knowledge sharing like discussion board is missing and there is no management to manage to all these files

PROPOSED ARCHITECTURE DESIGN
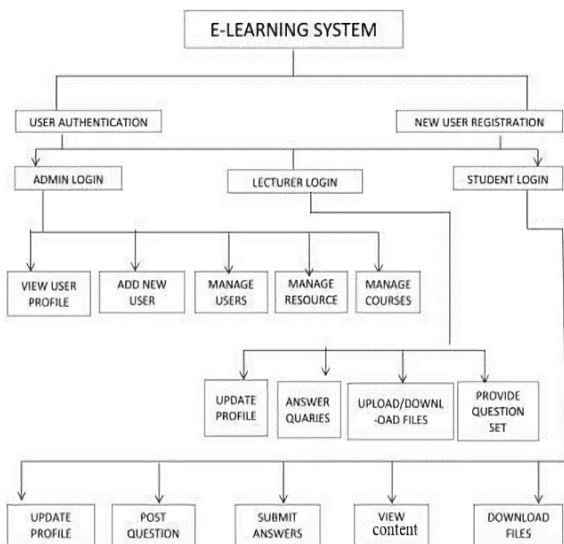
**Fig 1. Architecture diagram for E-learning platform**
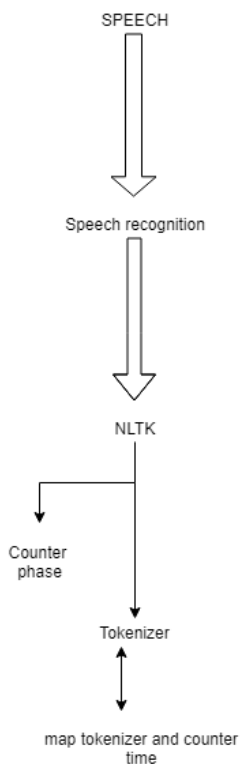
Fig 2. Architecture diagram Video Summarization

PROPOSED LOGIC

E-learning:

Characteristics of Web-based learning, Web-based learning does not require extensive computer skills, although familiarity with computers and software (particularly Internet browsers) decreases the acknowledgment hindrances Electronic adapting for the most part fits into one of three noteworthy classes: Self-guided autonomous investigation: Understudies decide the calendar and concentrate at their very own pace helps to reduce the acceptance barriers Web-based learning generally fits into one of three major categories: Self-paced independent study: Students determine the schedule and study at their own pace. They can survey the material for whatever length of time that important. Feedback from online tests appears as pre-modified reactions. Lamentably, there is nobody to whom the understudy can coordinate inquiries. This type of study requires the most self-inspiration Asynchronous interactive : The understudies take an interest with a teacher and different understudies, in spite of the fact that not in the meantime. They go to classes at whatever point they need or until the course material is finished. This methodology offers backing and input from the teacher and schoolmates. It is generally not as self-managed as autonomous education. It likewise permits time for thought about reactions thus basic reasoning aptitudes are enhanced. This can ameliorate in-depth investigation of a topic. In addition, it can likewise give social help and consolations to student and build the all-out exertion set forth by gathering individuals. This methodology will move the attention from the instructor-centred to learners-centred. This will produce a more egalitarian, democratic environment in which the instructor becomes a guide for knowledge and ideas . Synchronous learning: Students can attend live lectures via computer and ask questions by e-mail or forums built inside the platform. The organization is the most intuitive of the three and feels the most like a customary classroom. Adaptability is confined by the recently decided address plan. There are constrained course contributions in this arrangement because of high conveyance. With the end goal of this investigation, e-learning with a specific spotlight on advanced education establishments applies to the utilization of online learning frameworks to help with regard to instruction structure.

Authentication Phase:
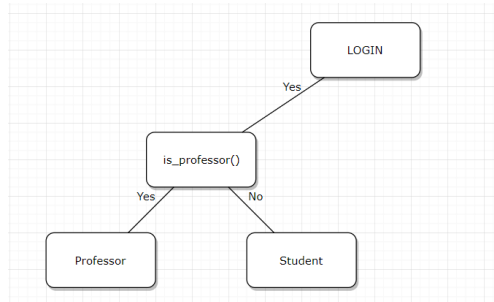
Fig 3. Authentication module

Authorization part of the application is described in above diagram where is_professor returns a value of true or false if Auth() is true and is_professor, returns false the user is considered as Student if both is_professor and is_admin returns true the current actor is considered as Admin.

MODULES :

- ➢ Login Page
- ➢ Authenticator module
- ➢ File sharing module
- ➢ Content creator module
- ➢ Admin ownership module
- ➢ Password reset
- ➢ Summarization module

Login Page:

Login Modules manages the login page and prevents the attacks like brute-force and Cross Site Request forgery in the input field

Authenticator module:

Performs user Authentication and if successful module set params based on the type of user. The password is stored as Bcrypt in SQLite database and creates a session and cookie to browser storage

File Sharing module:

Files uploaded to the application by the professor has the ability to set permission for specific user for students to access the content. The permissive activity is handled by file sharing module

Content Creator Module

This Content creator modules consist of WYSIWYG page and content uploading page where user uploads the content to the Server and is stored to /Media directory of the

Admin ownership module:

The admin module component can perform operations like create new user or delete user

Password reset module:

Is a submodule of admin module which performs the operation of sending password reset link to users via SMTP protocol

Summarization module:

Performs summarization with speech synthesis and NLTK library. The audio is extracted from retrieved video and undergoes speech synthesis to generate text content. The text content is processed under tokenizer function of NLTK to recognize and prioritize the content of the video and Movie4py extracts the clips the video at specific time lapse

Algorithm:

1) Input : Thermodynamics.mp4 , -t summarization time
=> *For (Duration; Split(mpeg4 , Flac)):*
2) Generate Transcript from ANN using
_generateTranscript(thermodynamics.flac);
(Fig 4)

Nltk.tokenize(transcript) and determines priorty of sentences (Fig 5) by tokenizing keywords (Fig 6)

Timestamp and keywords are mapped with

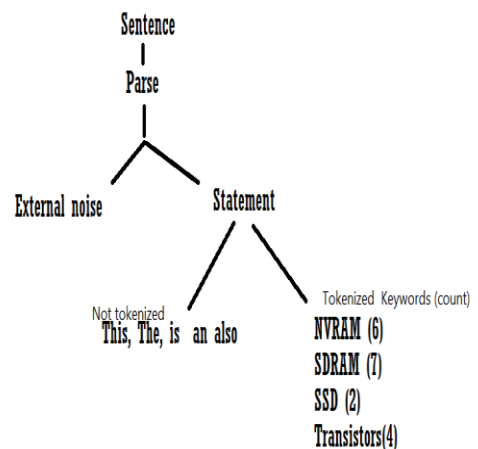-t and thus compiles the video to shorter span of given Summarization time Output:
=> *Thermodynamics_summarized.mkv*
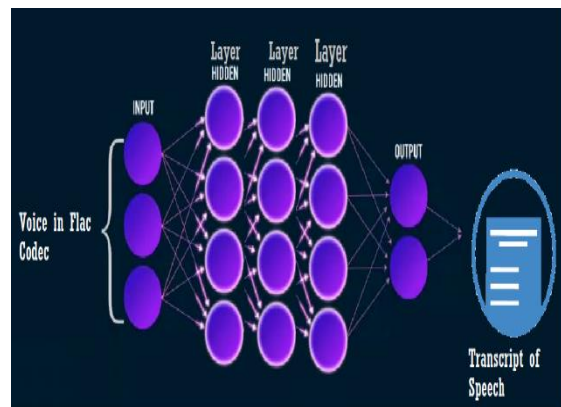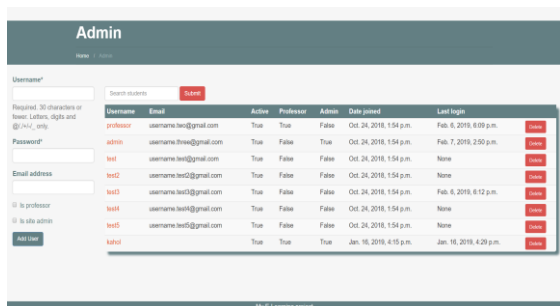

Fig:4 Speech to Text process using ANN

C - Voice Instance   O - Output   ⊗ - Artificial Neural Network
S - Sentence   W - Word from ANN
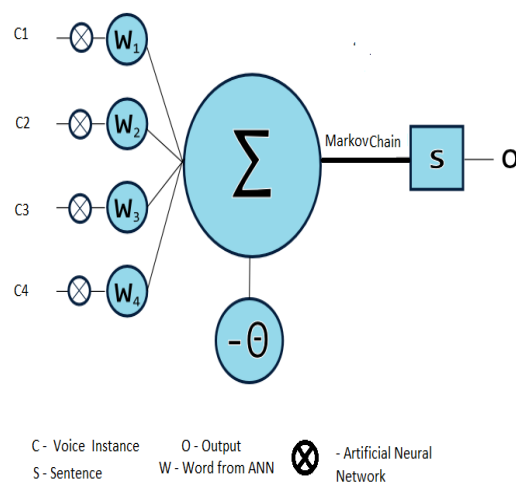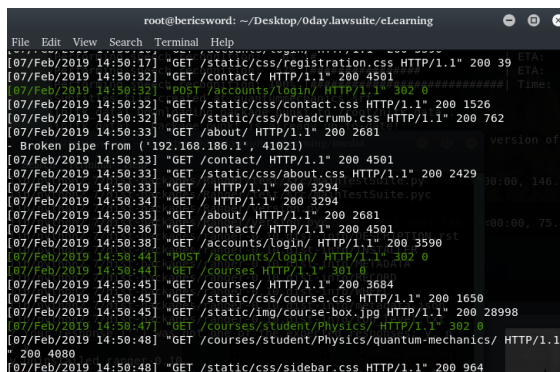
Fig 5 : Summation of Letters to sentence

Fig 6: Tokenization of keywords with NLTK

Deployment:

Fig 7. User Interface for E-Learning platform
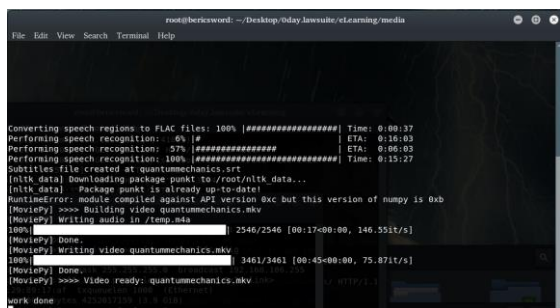

Fig 8. Live Django server

Fig 9. Video Summarizer

CONCLUSION

The proposed project is important to setup within an Institutional Network. This preserves time and utilizes the technology for the field of education. Thus it can motivate young minds in the field of development when they collaborate in a system designed within the institution

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