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Streaming App using React JS

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ABSTRACT: Due to COVID-19 whole world was in lockdown, all colleges and school are closed due to this student are not able to learn and teachers all also not able to teach. All people are shifted towards online platforms for study. So for smooth functioning of classes we created
User-Generated live video streaming systems are services that allow anybody to broadcast a video stream over the internet So that both student and teachers are able to contact fastly with each other and mode of education to very transferrable. We are living in era data has become most important for giant companies to manipulate us. Therefore, we have added Data visualization function to better understand your audience those to improve understanding quality. The recent explosive growth of live-streaming, particulary video game streaming on Twitch has led to make this streaming app. Our app is specifically curated for personilsation of teachers to produce more student friendly content and also help the students ask their doubts in live chat box.

KEYWORDS:React JS, web dev, Redux , live streaming , API, Crud, Node, Mongoose, RTMP server.

I. INTRODUCTION

A live streaming education app develop using REACT and REDUX technologies. The app is browser based and supports all basic CRUD (create read update delete) operations. The main purpose of this app is to provide smooth and easy access to live teaching and education streams. The unique feuture of this web app which distinguishes it from other similar apps is it allows one user to create multiple live stream simultaneously .

The app features google sign in to reduce the hassle of user registration. In this pandemic affected world where physical presence is not viable this app will work as a source of education .

In this project we have implemented the Live Streaming Online Education System using REACT, REDUX, React-Charts, Node, Mongoose ,RTMP server. We have projected our ideas to implement the Live Streaming Online Education System The application includes Classic CRUD (Create, Read , Update, Delete), which is used to implement a 3- tier Rest Architecutre. Hence, this system can be implemented in a field where online education plays an important role.

Livestreaming refers to online streaming media simultaneously recorded and broadcast in real-time. It is often referred to simply as streaming, but this abbreviated term is ambiguous because "streaming" may refer to any media delivered and played back simultaneously without requiring a completely downloaded file. Attendance is prime important for both the teacher and student of an educational organization.Live streaming can be used for medical education, engineering, humanities etc. And can also be experimented with other fields. One can hold workshops, lectures and the like and teach many people at one time without the need for a physical space. In fact, it helps in being frugal and using resources economically.

Online education enables the teacher and the student to set their own learning pace, and there's the added flexibility of setting a schedule that fits everyone's agenda. As a result, using an online educational platform allows for a better balance of work and studies, so there's no need to give anything up. Studying online teaches you vital time management skills, which makes finding a good work-study balance easier.Online education enables you to study or teach from anywhere in the world. This means there's no need to commute from one place

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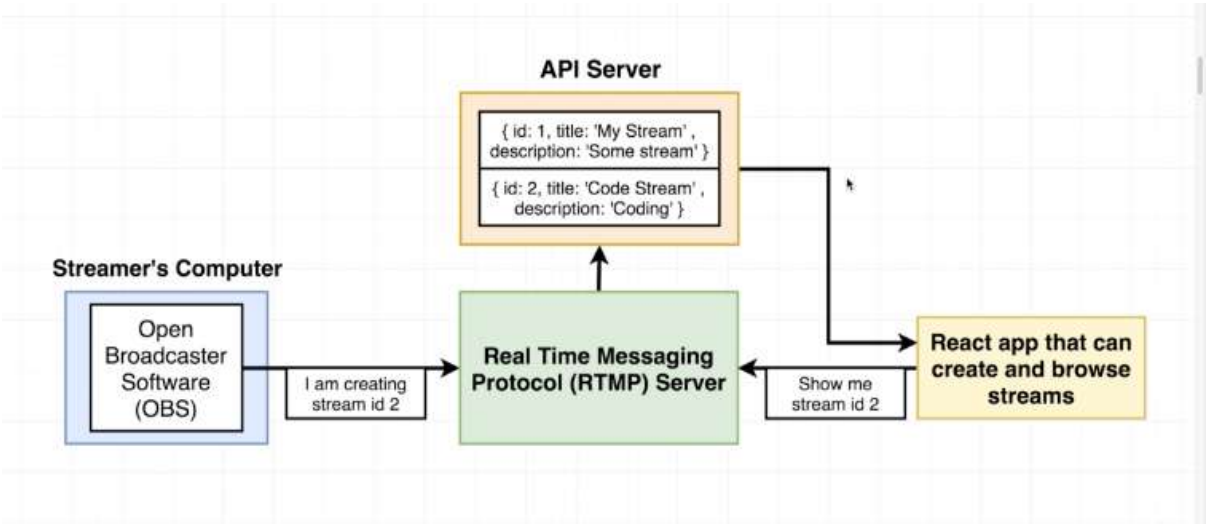
Live Streaming Website Implementation



In this project 2 servers are used namely, API server and RTMP server. The React App is launched via browser and fetches data through the API server. The RTMP server is used for live streaming video from the streamer to the viewer .The user can login to the system using Google sign in for ease of Sign In and higher security. The Home page consists of all the streams uploaded by the usesrs. If the user has created any stream a Edit and Delete button appears below the stream . In each Video page a comment box is present so that the student can ask questions to the teachers regarding any doubts. The website also possesses data visualization features for the teachers to understand and review their performance regarding the lectures also to improvise their mode of conduct for better results.

Screenshots of Homepage , Video Page from left to right.

II. MOTIVATION

Twitch is an American video live streaming service that focuses on video game live streaming, including broadcasts of esports competitions. In addition, it offers music broadcasts, creative content, and more recently, "in real life" streams. It is operated by Twitch Interactive, a subsidiary of Amazon.com, Inc. It was introduced in June 2011 as a spin-off of the general-interest streaming platform Justin.tv. Content on the site can be viewed either live or via video on demand.

The popularity of Twitch eclipsed that of its general-interest counterpart. In October 2013, the website had 45 million unique viewers, and by February 2014, it was considered the fourth largest source of peak Internet traffic in the United States. At the same time, Justin.tv's parent company was re-

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branded as Twitch Interactive to represent the shift in focus – Justin.tv was shut down in August 2014. That month, the service was acquired by Amazon for US$970 million, which later led to the introduction of synergies with the company's subscription service Amazon Prime. Twitch acquired Curse in 2016, an operator of online video gaming communities[6] and introduced means to purchase games through links on streams along with a program allowing streamers to receive commissions on the sales of games that they play.

By 2015, Twitch had more than 100 million viewers per month. As of 2017, Twitch remained the leading live streaming video service for video games in the US, and had an advantage over YouTube Gaming. As of February 2020, it had 3 million broadcasters monthly and 15 million daily active users, with 1.4 million average concurrent users. As of May 2018, Twitch had over 27,000 partner channels.

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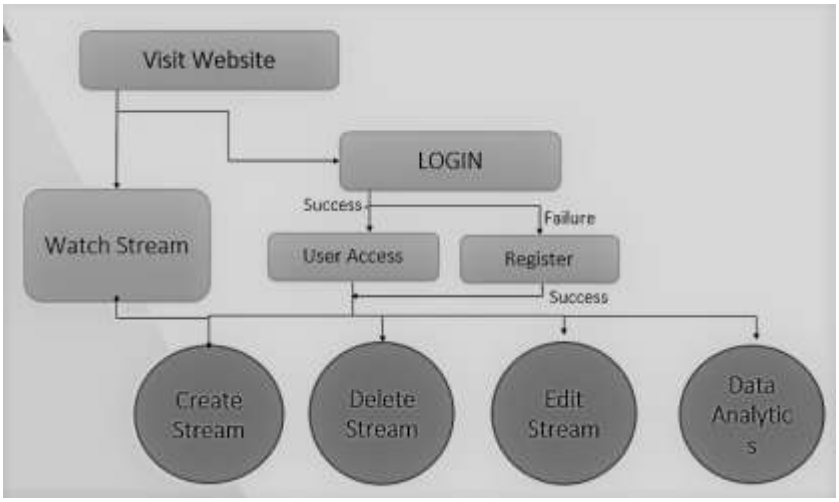
Twitch has also made expansions into non-gaming content; such as in July 2013, the site streamed a performance of 'Fester's Feast' from San Diego Comic-Con, and on July 30, 2014, electronic dance music act Steve Aoki broadcast a live performance from a nightclub in Ibiza. In January 2015, Twitch introduced an official category for music streams, such as radio shows and music production activities, and in March 2015, announced that it would become the new official live streaming partner of the Ultra Music Festival, an electronic music festival in Miami. The users to tag their friends in the photo for entertainment purposes. Furthermore, Intel Company allows the users to use face recognition to get access to their online account .

Twitch brought in an estimated $1.54 billion in revenue in 2019. Of course, not all of that goes to the individual streamers, but successful streamers can make between $3,000 and $5,000 per month through subscriptions alone.



DATA VISUALIZATION FEATURES

The Data Visualization page contains different types of figures and charts like histogram , doughnut , graphs etc. The figures are used to represent different data for eg the number of students attending the different subject / classes taught by a particular teacher . This may help the teacher to better understand his audience and improvise on his teaching skills and habits. Furthermore, It can also be used by teachers to know how much time a student is sitting for different subject / different teachers. This may help the teacher to better understand students behaviour and react according to it. With the help of such features , we aim to revolutionalise the teaching industry and make a much more healthy and informative environment .

GOALS AND OBJECTIVES:

The objective of this project is to develop online education system. Expected achievements in order to fulfill the objectives are:

• To Stream video created by one user accessible to another user in real time.

• Data Visualization by processing and modify data.

• Ability to create , edit , delete and watch streams .

• Secure authentication and authorization of users .

OUTCOMES:

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We are setting up to design a system comprising of two modules. The first module (face detector) is a mobile component, which is basically a camera application that captures student faces and stores them in a file using computer vision face detection algorithms and face extraction techniques. The second module is a desktop application that does face recognition of the captured images (faces) in the file, marks the students register and then stores the results in a database for future analysis.

System type	Advantages	Disadvantages
Node js	performance, faster development	Unstable API.
React	boosts productivity ,fast rendering	The high pace of development
Mongo DB	Easy to Scale	limit for document size
Redux	global accessibility	Boilerplate code. Restricted design.

Table 3.1: Different Technologies used In this Project

Sr. No.	Tasks	Description
1	Requirement Gathering	Doing survey of multiple students and teachers.
2	Requirement Analysis	Analysing all the gathered information and finalizing the requirements.
3	Designing	Creating the architecture to be implemented. Making UML Diagrams and finalizing the structure and flow of data.
4	Implementation	Coding of the application
5	Testing	Testing the modules
6	Deployment	Deploying the project in the environment.

Table 5.2 Project Task Set

III. CONCLUSION

To conclude, we discussed the scheduling processes of developing this system. Additionally we have also identified how feasible the system is through the lens of evaluating using various feasibility studies. In this project we have implemented the online streaming platform using React, Node, Mongo, RTMP, Redux . We have projected our ideas to implement a easily accessible and interactive education platform to help students study and engage in live classes.

FUTURE SCOPE:

The system we have developed has successfully, able to accomplish the task of streaming live classes from one user to another. We have been successful in creating all the basic CRUD functionalities (Create, Read , Update , Delete) along with Data Analytics. However, there is a possibility of much more advancement such as Integration of natural language processing algorithms along with deep learning can further improve user experience by auto rating live streams and thereby dynamically recommending steams to users based on their previous choices.

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