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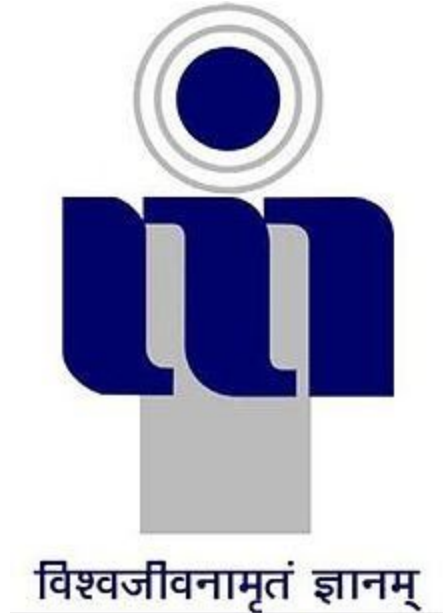
Software Engineering
Project Report

SEMESTER - IV

Submitted To - Prof. Santosh Singh Rathore

Project Proposal

Project Title: - Video Call And Chat Application

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Abstract -

This project aims to develop a full stack web based application which allows users to create rooms for video calling and chatting with other users.

Why and whom it will be beneficial for ?

2020 is a unique, uncertain, confusing, and extremely controversial year, which made almost the whole planet adopt a new lifestyle. People of the globe are advised to keep social distancing and try to find their way around with digital and mobile solutions in every sphere of their life from everyday family shopping to managing global business corporations.

The COVID-19 outbreak became a reason for video conferencing solutions quickly came into play and became trending since they allowed people to stay in touch and maintain remote and stable communication for business needs.

2020 has made lots of entrepreneurs change their vision on their businesses, even those who did not see their niche online have started to look for ways to shift.

So, why an idea to make a video conference app is beneficial for e-commerce and businesses

What System will do?

- ❏ **Video conferencing** is good not for personal communication only. The possibility to see colleagues during communication has proven to increase productivity and improve collaboration, which results in faster and better work.

- ❏ **Realtime Chat** between users which allows users to share text messages with each other in the given room.

- ❏ **Video assistance** in retail. Chat-based communication is good, but we all know that it is better to once see. Therefore, with such a solution you can not only improve sales and client loyalty but also brand performance and customer service since video allows you to solve issues faster and more efficiently.

- ❏ **Corporate platforms** for professional interaction. Develop a video conversation app and increase your team performance by up to 45%. This is the result, which showed social platforms supporting one-on-one video calls used as collaboration tools in some companies. Follow this example and benefit.

You may doubt whether it's a good idea to build such an application in the present-day highly competitive environment. It is really a challenge to create a unique solution, however, for a group of 4 people with duration of one semester is an ambitious project to build a custom product with a touch of individuality, for the needs of a specific client is a good idea to invest your money and energy into. Most of the successful software solutions are perfected versions of someone else's concept, so it makes sense to try to make this video chat application.

Feasibility Report

Financial feasibility -

How Much Does it Cost to Make a Video Chat App?

To be straightforward, we'll say that to make a video chat app for 2 platforms and a simple admin panel will cost us xxx$. However, the cost of development is dependent on the functionality you want to see in the solution, its size, and security aspects. Moreover, you have to manage, operate, and host the service somehow. Keep it in mind for the correct budget estimation.

To create a thriving software solution, you need to go through the following stages:

- Discovery Phase
- UI/UX design,
- Frontend and
- Backend development,
- QA
- Testing

Besides, you may need to create an app like a video chat web app for your users' convenience, since there are still many tasks solved on PCs and not via mobile devices.

Ways to Monetize a Video Chat App

Monetization is no less important than app creation since it's your opportunity to gain profit from the whole undertaking.

So, read some hints on how to monetize your video chat app. You may use the following:

Subscription

Provide abridged app version free and offer a subscription for extended functionality or make certain features payable, like customization, stickers, or some specific services.

Paid services

Set certain limits for free product usage and charge calls longer than a certain time limit or the ones with the number of participants exceeding some set figure.

White Labeling

Create a video conferencing app, but let other individuals or enterprises rebrand it with customizable features to meet the demands of their target audience and client requirements.

Content Merchandising

Allow crafting themes, wallpapers, stickers, emojis and other features related to a certain brand. If the brand wants to raise its popularity among the users, you can always benefit from this revenue-generating opportunity for you.

Advertisement

Brands are now eager to reach customers directly, take advantage of it and offer various brands to advertise their goods or services in your application with ads streamed on the status bar or something similar to stories.

Ad pricing models can vary—cost per/click/mile/action/conversions.

Official Accounts

In case your solution gains popularity with celebrities and brands, offer them creating official accounts for fan engagement and interaction. Embedding of some specific features may even add credibility to particular pages and your app on the whole.

In-Chat Payments

In case you integrate payment options for your users' convenience, consider the possibility to make transactions without leaving the chat interface. No matter if the user wants to send or receive money, make a purchase right away, or pay a bill, you can generate your revenue charging fee for money transfer. Keep in mind that your security should be even more multi-layered and free from risks in this case.

Technical Feasibility -

This project is a web-based application. The technologies used in this project are as follows :

- ❏ The frontend of the project is built using **HTML**, **CSS**, **Javascript**, **Bootstrap** and **ReactJS** Library.
- ❏ **MongoDB** is used as a database for this project.
- ❏ Backend of this project is built using **NodeJS** and **ExpressJS**.
- ❏ Websockets using **Socket**.**IO** for Realtime Chat and Video with users and rooms.
- ❏ **WebRTC** API and **PeerJS** library to make connections between various peers.
- ❏ User authentication and authorisation using **JWT**.
- ❏ Deployment of the project will be done using services like Heroku and Netlify. It can also be deployed using Cloud Services such as Google Cloud, AWS or Microsoft Azure, etc. The application can also be containerized using Docker and services like Kubernetes for easy deployment.

The application will be developed considering software engineering paradigms in mind.
It is scaled horizontally so that it can handle a large number of users efficiently and in an effective way.

Each of the technologies is freely available and the technical skills required are manageable.
Time limitations and the ease of implementing using these technologies are synchronized and are negligible.
From this, it is pretty clear that this website is technically feasible.

Resource and Time Feasibility -

Resources that are required for the proper implementation of this project are:

➔   Programming devices such as PC, and Laptops

➔   Hosting space on the local domain

➔   Programming Tools

➔   Programming Individuals

➔   Web and Hosting Services for client-server flow

Estimated Time Required to Complete the Project:

❖   3-4 Months.

Risk Feasibility -

Risk feasibility can be discussed in several contexts, some of them are follows:-

➢ **The risk associated with size**: total file size of our project is upto 200MB which contains only an ample amount of codes written by us. It's doesn't contain any media files we have used in our project

➢ **Estimated size of product in several programs**: it contains a single website with a single login page   rather than having a many number of sites for different users.

➢ **Customer Related Risks:** This project is a general type of project(not designed for a single organization). Before implementing the system in organization, there will be some basic modifications required.

➢ **Technical Risks:** All the technologies we have used in our project are well known in this modern IT era and very well established.
As per requirements of client. Algorithms we have used are very well known and old enough to understand the Web developers community.

Social and Legal Feasibility -

The Project users freely available development tools and provides the system as an open-source system. We have added features in our project considering our deadlines so anyone can add or modify this project as it will be open-source.

CONSIDERATION

- **Performance**:
  The Project requires very low bandwidth, hence the performance will not degrade, with the increasing number of potential users. At the development stage, A free hosting service will be used. But when installing the system to a real university environment, it will be hosted in a much more reliable server to increase the performance.

- **Security:**
  Security measures are provided in many aspects of this system.
  User Authentication and Authorization: Users will have to authenticate using the username and passwords. The passwords of all users are stored in hashed format in the database for security reasons. Depending on the access level each user will gain the functionality of the system.
  Login Details: Each user's login time and logout time will be recorded in the local storage of the browser, to make the tractability process easy in case of faulty action.
  Protected API Endpoints: Some API endpoints are only accessible to those users who are admins and specific users who have made an account. No one can create a room if he/she isn't logged in.

- **Usability and Ease of Use:**
  The interfaces are designed to make it easy for any potential user to get familiar with the system in no time. No additional training is required to use the system, neither to the management nor for a respective authorities and involved in the procedure.

- **AVAILABILITY:**
  The system will be available throughout the 24 hours. Mean time to failure and mean time to repair will be decided to increase the availability. With a paid hosting space, the availability can be guaranteed to great precision.