A

Project Report

On

Video Conferencing Platform

SUBMITTED BY

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INTRODUCTION

Video conferencing is an online technology that allows users in different locations to hold face-to-face meetings without having to move to a single location together. This technology is particularly convenient for business users in different cities or even different countries because it saves time, expenses, and hassles associated with business travel. Uses for video conferencing include holding routine meetings, negotiating business deals, and interviewing job candidates.
When a video conference is held for informal purposes, it is called a video call or video chat.

Key Takeaways:

- Video conferencing is a technology that allows users in different locations to hold real-time face-to-face meetings, often at little to no cost.

- There are many ways to utilize video conferencing technology, such as company meetings, job training sessions, or addressing board members.

- Video conferencing saw a huge boost amid the global COVID-19 pandemic.

- The stability and quality of the video conference may fluctuate with the speed and reliability of the data connection.

- There are a variety of ways video conferencing can be conducted—such as using smartphones, tablets, or via desktop computers.

How Does Conferencing Works?

Video conferencing's main advantage over telephone conference calls is that users can see each other, which allows them to develop stronger relationships.

There are a variety of ways video conferencing can be conducted. Individuals may use web cameras connected to or built into laptops, tablets, or desktop computers. Smartphones and other connected mobile devices equipped with cameras may also be used to connect for video conferences. In such instances, a software-based platform typically is used to transmit the communication over internet protocols.

Some businesses use dedicated video conferencing rooms that have been equipped with high-grade cameras and screens to ensure the conversation is clear and with limited technical faults. Third-party providers often install and assemble the hardware needed to conduct the video conference**.**
This is the basic chatbot made, the user interacts with this kind of bot by using predefined options. To get answers from these bots, users need to click on certain options. These kinds of bots collect the user's request, analyze it, andthen offer results in the form of buttons. These bots are commonly used to replace frequently asked questions when it comes to complex queries; they aren't always thebest solution.

PROJECT AIM

The main purpose of video conferencing is to enable face-to-face communication between two or more people in different locations. It is a popular alternative to phone conferencing for businesses and provides individual users with an inexpensive means of communication with distant friends and family.

PROBLEM STATEMENT AND SOLUTION

The main issue is it is hard to communicate during the times like pandemic or to stay in contact with our closed ones. To stay connected in big organizations is not possible or to manage a team is not possible or to meet all the members at same time.

Solution :

To solve this problem video conference is come into picture it is designed to connect with remotely located person over internet.

Save money and time. Without doing any traveling we can meet or host meeting over internet.

Video Conference Benefits :

1. Improves communication
2. Helps build relationships
3. Saves money and Time
4. Improves efficiency
5. Makes scheduling meetings easier
6. Enables live events

Technology: Python 3.10 And Agora Api

Design Details :

Uses of Agora Api for smooth integration of video and chat feature.

OBJECTIVE

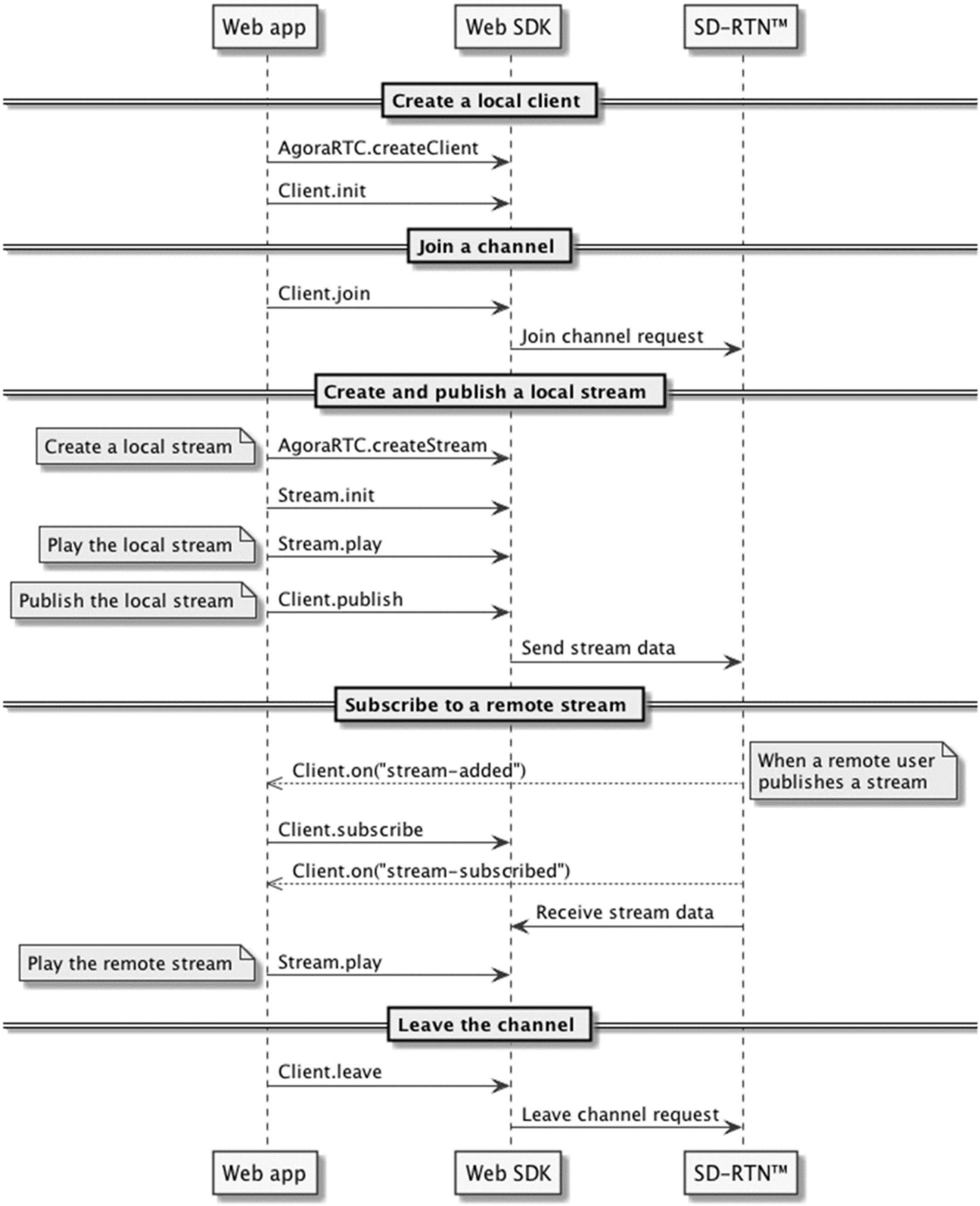
The main purpose of video conferencing is to enable face-to-face communication between two or more people in different locations. It is a popular alternative to phone conferencing for businesses and provides individual users with an inexpensive means of communication with distant friends and family.

WORKING

Video Conference – Using Agora Api and Sdk

Use Case : Video Conference

Working of Video Conference (design details)


Web app
Web SDK
SD-RTN™
Create a local client
AgoraRTC.createClient
Client.init
Join a channel
Client.join
Join channel request
Create and publish a local stream
Create a local stream
AgoraRTC.createStream
Stream.init
Play the local stream
Stream.play
Publish the local stream
Client.publish
Send stream data
Subscribe to a remote stream
Client.on("stream-added")
When a remote user publishes a stream
Client.subscribe
Client.on("stream-subscribed")
Receive stream data
Play the remote stream
Stream.play
Leave the channel
Client.leave
Leave channel request
Web app
Web SDK
SD-RTN™

Implementation:

Once the project is set up, use the core APIs of the Agora Web SDK in script.js to implement the basic video call function.

Need to work with two types of objects when using the Agora Web SDK:

The client object, which represents the local client. The Client methods provide the major functions for a voice/video call, such as joining a channel and publishing a stream.

Stream objects, which represent the local and remote streams. The Stream methods define the behaviors of a stream object, such as the playback control and video encoder configurations. When you call a Stream method, you need to distinguish between the local and the remote streams.

The major steps for implementing a basic video call are as follows:

1. Create and initialize a client object.
2. Join a channel.
3. Create a local video stream and publish it.

We're importing the AgoraRtcEngine class from the SDK. We disable an alert if the user doesn't input an Agora App ID. We create a new instance of the class — rtcEngine. We use the App ID to initialize our engine instance.

Agora uses an events based SDK. For example when we successfully join a video channel we get the joinedChannel event, which we can then use to execute our functions. We're setting an event handler that calls the setupLocalVideo method on the engine, and we pass in our div localVideoContainer to render the local user's video feed.

Next, we're setting up an event for userJoined that is triggered whenever a user joins the channel. We use thesetupViewContentMode method to set up the remote video feed, passing in the UID from the event and 1 to use the fit mode. We can use 0 to crop the video to the size of the div. We then use the subscribe method, which subscribes to a remote user and initializes the corresponding renderer by passing in the UID and the HTML container. We're using the remoteVideoContainer div.

We're now using the setChannelProfile method to use the communication profile. We can also use live streaming. We're enabling the video module using the enableVideo method.

Next, for our buttons, we're setting onClick functions. The start button uses the joinChannel method to join a channel: it accepts the token, channel name, optional info, and a UID. We pass in null for the token. If we're using an app in secure mode, we canuse a temporary token. We have "test" for our channel name, but you can use any string. Users on the same channel can communicate with each other. We pass in null for the info parameter, and we're generating a random UID using the Date function. All users in a channel should have unique UIDs.

The stop button calls the leaveChannel method and clears the remote videos.

Breakdown of functions in agora/views.py

- **index**: To view the video call page. Only authenticated users can view the page. Non-Authenticated users are redirected to the login page. We return a list of all the users apart from the currently authenticated user to be rendered on the front end.

- **pusher_auth**: It serves as the endpoint for authenticating the logged-in user as they join the Pusher presence channel. The ID and name of the user are returned after successful authentication with the pusher.

- **generate_agora_token**: To generate the Agora dynamic token. The token is used to authenticate app users when they join the Agora channel to establish a call.

- **call_user**: This triggers a **make-agora-call** event on the **presence-online-channel** to which all logged-in users are subscribed.

The data broadcast with the **make-agora-call** event across the **presence-online-channel** contains the following:

- **userToCall**: This is the ID of the user who is supposed to receive a call from a caller.

- **channelName**: This is the call channel that the caller has already joined on the front end. This is a channel created with the Agora SDK on the client side. It is the room the caller has already joined, waiting for the callee to also join to establish a call connection.

- **from**: The ID of the caller.

From the **make-agora-call** event, a user can determine whether they are being called if the userToCall value matches their ID. We show an incoming call notification with a button to accept the call. They know who the caller is by the value of from.

ADVANTAGES OF VIDEOCONFERENCEING PLATFORM

1. Improves communication

A report by Forbes tells us that "humans process visual information far faster and more aptly than text or audio." And, relative to audio conferencing, "62% of executives agree that video conferencing significantly improves the quality of communication. In addition, 50% of those surveyed believe video conferencing also improves the degree of understanding." Whether you're a small business owner or part of a large company, clear communication is critical to understanding projects, setting expectations, and meeting your goals, which makes video conferencing a win, no matter how you look at it.

2. Helps build relationships

When you meet face-to-face, you can make a personal connection, pick up on verbal and non-verbal cues and begin to build trust. And while there may be critical connections that you'll need to travel for, video conferencing can help bridge the gap for all other meetings , while still helping you connect on a personal level. For the skeptics among us, research shows that video conferencing is widely regarded as a helpful tool.

3.Save Time and Money

4. Improves efficiency

Clearer communication **Improves efficiency**

Clearer communication by way of verbal and non-verbal cues, screen sharing, real-time collaboration, and the power to join from virtually anywhere makes video conferencing a more efficient use of everyone's time.

CONCLUSION

Video Conference can bring people closer and help to stay in contact.

The potential for Video Conference is limitless. It can be useful for small and also for large companies

For small businesses, Video Conference is crucial as it saves time and resources.

REFERENCES

[Links] :

https://www.intermedia.com/blog/how-to-implement-video-conferencing-right-now/

https://medium.com/geekculture/build-your-video-conferencing-app-a-step-by-step-guide-6cfddeb84f51