

# SPATIAL CONFERENCING APPLICATION

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## ABSTRACT

Given these new normals, video conferencing has grown in popularity and reliability as a tool to overcome great distances in situations when travelling is not wanted, not feasible, or not desired at all. Web Real-Time Communication (webRTC) enables individuals in various locations to summon in-person meetings using audio and video teleconferencing. More and more educational institutions are conducting experiments and studies to better understand the needs

of video-conferencing and its applications. Additionally, with the new demands and technology, augmented reality may be used to make conferences more engaging by providing consumers with a more immersive experience. This article provides an overview of video conferencing with a focus on the user experience, and then goes on to discuss how to augment different items to make the experience more engaging.

## INTRODUCTION

Though it has taken several shapes throughout the years, communicating one's identity has always been vital. Communication via the transmission of peer-generated material over the internet is one of the most prominently used forms of technology in recent times. Because it is more robust and trustworthy, technology is commonly used in real-life situations, and it is also accessible to all. People are praising video use as the next big thing in transmission. As a result of more accessible and affordable internet and other technological advancements, video conferencing has lately grown in popularity. Modern, independent video conferencing devices may work with slow broadband internet connections while still producing high-quality video and audio owing to extensive use of cost-effective compression. It is now possible to take part in Associate in Nursing incredibly because to rising technique power and inexpensive accessories, such as webcams.

Dedicated coding software for video conferencing on a standard laptop, eliminating the need for expensive specialised gear. Many businesses and government agencies have scrapped their trip plans in favour of online conferences in an effort to save money and time since their budgets are becoming very tight.

the first one With this method, you may quickly and easily access file sharing and other cooperative services; what's more, it's less expensive and a lot more convenient to use. The tools that provide extensive engagement inside the virtual classroom via video conferencing are now readily available, thanks to the explosion of living knowledge. Educators may provide their distant students a far more engaging and participatory learning experience via the use of video conferencing technology. This includes not just the traditional electronic media but also real-time video, phone, and data connectivity.

Numerous communication technologies, such as mobile technology, have recently been created, and it is anticipated that various forms of communication systems will be used in the near future. However, due to the need for specific technological issues, video communication systems have not yet spread widely. The development of wireless or optical communication technologies, as well as compression technologies, will address one of the biggest challenges, which was the small data measure for picture transmission. System improvements for video

communication that take human variables into account are more important than ever before

Given the present condition of things. Our system-style supported coinciding is usually justified by

offering experimental evidence that it outperforms pure video streaming with sequential optical chase in terms of quality, while also including optical chase and 3D application sharing. In contrast to videoconferencing, which makes use of augmented reality, application sharing synchronises reading into a second or third area.

A video conferencing system in an augmented reality (AR) setting was something we had created. We provide our video-to-conferencing technology and some analytical findings in this work. There is an opportunity to outdo such a haul with the use of Augmented Reality (AR) technology. Users in an augmented reality setting will be able to see digital items inside their physical home.

## OUR PROPOSED METHODOLOGY

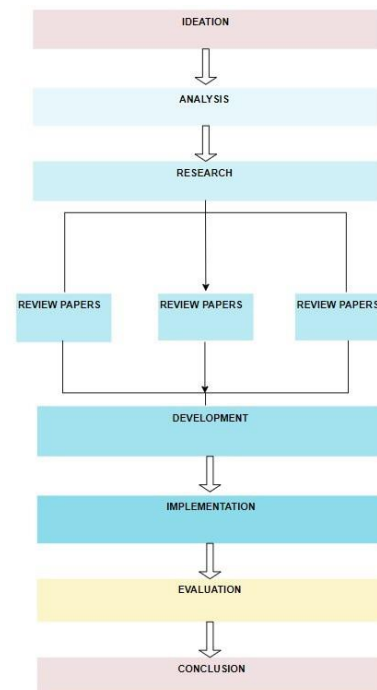
Figure 1 : Method followed to do the research.

The works and compositions from which this survey's data is interestingly culled must first be examined. Therefore, we need some basic information from these works, such as the title, subject, etc. We must next decide on the criteria that will be used to the looking prepare. The next step is for each author to independently search the works or papers for important material using the created instructions. The next step is to compile all of the data: the writers trade works. The total number of papers examined is three, as there are five writers in this study. Finally, all of the original copies are double-checked by each author. All the data has been taken from the original copies, combined, and blended at this stage. The results column will provide the final survey outcome.

At first, we looked at a small number of results about the webRTC framework's potential for video conferencing.

Developers may use WebRTC to make it easier for users to communicate via voice, video, and data across browsers without the need for any plug-ins. This makes it less difficult for programmers to streamline browser-to-user interaction and enhance the user experience.

it is Since the room-owner is supposed to act as the



"offered" for every new participant, it is necessary to establish a new "offer" as well. As soon as an offer is generated, the "offer SDP" should be sent via the same socket that the room owner and participant use to exchange SDP/ICE.

Participants should use the offer SDP to specify remote descriptions. Additionally, a response to the

call has to be prepared. It is essential that we transmit the newly-created "answer SDP" via the same connection that is now being used for the purpose of exchanging SDP/ICE between the host and guest. The last step in completing the handshake is for the host side to set the remote descriptions using the response sdp that the participant supplied.

When exchanging, posting, or transferring these ICE candidates from the owner's side to the participant's side, we should all utilise the same socket.

(1, 2, 3). 3D regional models were enhanced with the surroundings to make this video conferencing more engaging. Unity can do this. Downloading the software and creating an account in Unity and Vuforia are the first steps. Vuforia requires that we create

licences for each application before we can begin setting it up. Now we can upload each target picture to the vuforia dataset we built on the vuforia website and download it so it can enhance in our environment. We need to keep the licence key on file for future use in unity while we're licencing. (5) After downloading the appropriate apps, such as XCode or Android Studio, on your iOS or Android device, you can build and test your item using the camera on your mobile device. Then, view the scene to see how the thing appears in real life. Now, a dynamic experience may be created by combining augmented reality with video conferencing. Adding a video conferencing software and additional 3D models to enhance the actual area are two ways to make this even better.

## RESULTS

In this section, the results obtained after analyzing the works detailed previously are presented.

In Initial phase of video conferencing using manual offer and answers and setting the remote descriptions.

Figure 2: Create offer, answer and set remote description

Video conferencing implemented using webRTC and the ngrok command prompt that tunnels the peers' media to the host.

Figure 3: Video Conferencing using WebRTC and Ngrok command prompt

Automating the process of offer creation and answering also using ngrok to tunnel the media

from peer to the host. The figure shows video conferencing using webRTC.

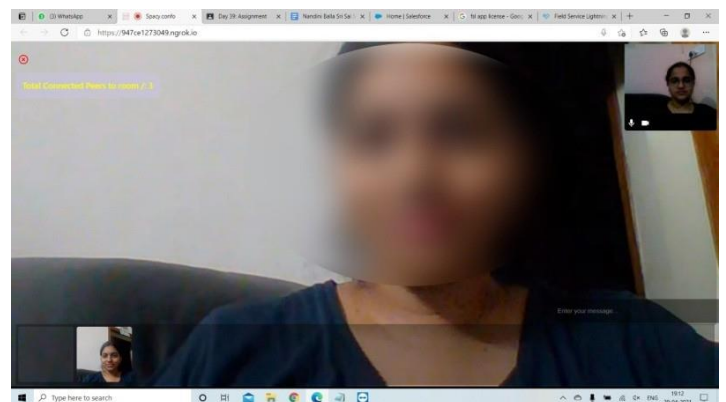


Figure 4: Complete working of the video conferencing using webRTC

By augmenting 3D model of a classroom in my environment using unity and vuforia.

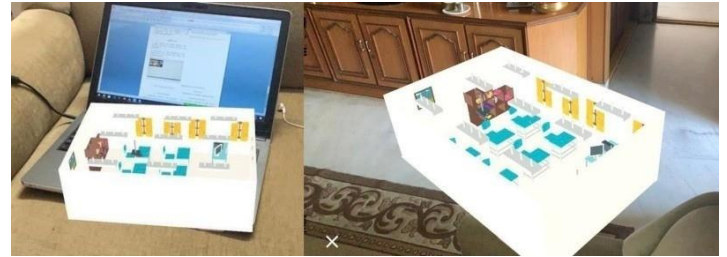


Figure 5: Augmenting 3D object in my environment

## CONCLUSION

With the use of video conferencing, a two-pronged strategy may be established, empowering students to have a greater say in their own education, the success of their teams, and the results of their learning. Video conferencing makes all of these things feasible, which is great for the educational system overall. When compared to other resources used by designers, such

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[5] Results of a Performance Evaluation of WebRTC and SIP for Video Conferencing; July 2019, by Navrattan Parmar and Virender Ranga of the Department of Computer Engineering at the National Institute of Technology in Kurukshetra, Haryana. (January 2011) Chris Poppe, Charles-Frederik Hollemeersch, Peter Lambert, Sarah De Bruyne, and Rik Van de Walle: An architecture for immersive video conferencing utilising Unity apps.

as print media, it falls far short. Its actual purpose is to initiate discourse, despite the fact that promoting architecture is its declared aim. According to [9], Because of this, webRTC video conferencing apps may be created; as augmented reality trends start to explode, these apps can be even better by adding augmented 3D items

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