

INTERNATIONAL JOURNAL FOR ADVANCE RESEARCH IN ENGINEERING AND TECHNOLOGY

WINGS TO YOUR THOUGHTS.....

VOIP Based Holographic Calling Using Prism Assembly

Abhilash More¹, Ganesh Waghmare², Shubham Kokatnur³
Ajikya Tipole⁴, Prof. Mrs. Shwetambari Chiwhane⁵

NBN Sinhgad School of Engineering
Ambegaon (Bk), Pune-41

¹abhilashmore93@gmail.com, ²ganeshwaghmare248@gmail.com
³shubham.kokatnur@gmail.com, ⁴ajinkyatipole@gmail.com
⁵shwetambari.chiwhane@sinhgad.edu

Abstract: The 2D visuals lack ability of visualization. It only supported 2D calling i.e. video calling cannot give real effect. 2D calling was effect of high speed GSM network which was capable of sharing visuals from one node to another. It gave the ideology of transmitting the 2D set of image in sequence of frame which resulted in 2D video calling. We are proposing a system which will give the Holographic calling facility with a help of specially constructed prism. The prism will also be constructed along with the system. The proposed system gives the facility of Holographic calling. It involves capturing of video call via camera (webcam/mobile) and then video call is divided into audio and video. The video is divided into Frames per Second (fps). Operations like Translation, Scaling and Rotation are performed on particular Frame. Prism assembly is placed on the display and illusion is projected. This illusion gives a realistic effect. The future scope of proposed system will be enhancement of holographic projection into actual 3D effect.

Keywords: Holographic Projection, Voice Over IP, Prism, JETTY Server

1. INTRODUCTION

Holographic calling is a process of capturing in 2D. The Holographic effects can enhance the performance and can give better experience of calling. Hence we are proposing a way to develop such a system which will give the Holographic calling facility with a help of specially constructed prism. This calling will enhance the process of illusion based calling. The proposed system gives the facility of holographic calling. In this proposed system firstly we will capture 2D video call [1] via webcam/mobile and then this call is bifurcated into audio and video. The audio is processed with required amount of delay. And video is divided into Frames per Second (fps). Operations like Transformation, Scaling and Rotation [2] are performed on each Frame. We will get 4 replication of particular each Frame. The 4 replicas are produced on axial co-ordinates on display. Prism assembly is placed on display and illusion is projected. Thus Receiver gets a video illusion at other end.

2. DEFINITION

2.1 VOICE OVER IP

Voice over IP (VoIP) [3] is a methodology and group of technologies for the delivery of voice communications and multimedia sessions over Internet Protocol (IP) networks, such as the Internet. Other terms commonly associated with VoIP are IP telephony, Internet telephony, broadband telephony, and broadband phone service.

2.2 TRANSLATION

Moving an object is called a translation. We translate an object by translating each vertex in the object. Translation is the process of translation of object in desired motion.

2.3 SCALING

Changing the size of an object is accomplished by a transformation called scaling. Scaling an object is

implemented by scaling the X and Y coordinates of each vertex in the object.

2.4 ROTATION

Rotation is a transformation that causes a point p to be moved relative to a central point, without changing the distance of p from that point. This transformation is accomplished by applying the rotation equation to each vertex of the object. A rotation is specified by providing an angle, B, indicating how many degrees of rotation are desired. This angle may be either positive or negative. A positive angle indicates a counter-clockwise rotation about the origin.

2.5 JETTY SERVER

People, Jetty are now often used for machine to machine communications, usually within larger software frameworks. Jetty is developed as a free and open source project as part of the Eclipse Foundation. The web server is used in products such as Apache Geronimo [4], Google App Engine [5], Eclipse [6], Twitter's Streaming API [7]. Jetty is also the server in open source projects such as Lift, Eucalyptus, Red5, Hadoop and I2P [8]. Jetty supports the latest Java Servlet API (with JSP support) as well as protocols HTTP/2 and Web Socket.

3. PROPOSED SYSTEM

The proposed system will work as follows:

User 1 will communicate with User 2 via projector based calling. The User 1 creates the connection to the system and establishes a call with User 2. This process will involves video call, this call will be transferred to the system. System will differentiate audio and video call. The audio will be transmitted from User 1 to User 2 with addition of required amount of time. The video call will be processed by the system and operations will be performed on the video call

INTERNATIONAL JOURNAL FOR ADVANCE RESEARCH IN ENGINEERING AND TECHNOLOGY

WINGS TO YOUR THOUGHTS.....

which includes transformations like Scaling, Rotation and Translation. The produced video will be transmitted from system to User 2. The prism assembly with proper angle of alignment will be placed on the display of User 2. This will produce a Holographic video of calling from User 1. Thus User 2 will get a Holographic call from User 1 via proposed system.

3.1 ARCHITECTURE

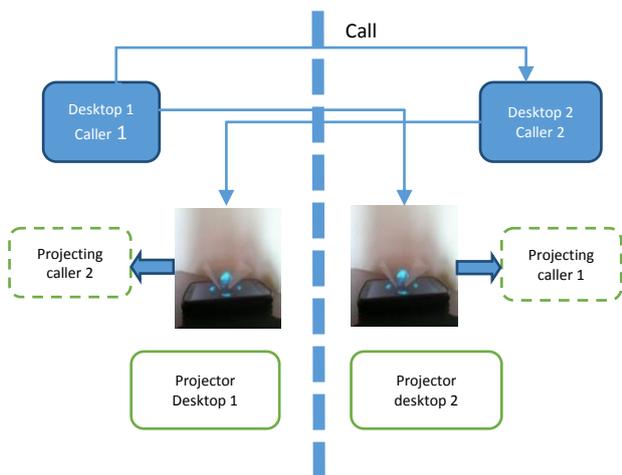


Fig.1 Proposed Architecture

Fig.1 is showing proposed architecture which is described as follows:

The proposed system has three ideal terminologies viz. Input, Process & Output.

Input: Input process for the Holographic Calling will be in three stages:

- 1] Capturing of Video in Camera (Web Cam or Front Camera)
- 2] Recording of Audio
- 3] Live Transmission of both

Process:

- 1] It involves of accepting of live Call via Server.
- 2] The process will involves bifurcation of signal into Audio signal and Video Signal.
- 3] Audio Signal will be processed with delay elements.
- 4] Video will be processed into frames per second.
- 5] Operations will be performed on the video frames like Scaling Rotation & translation.
- 6] Processed video frames will be on axial quadrants of display.

Output:

Output of system will be on diagonally projected with help of prism. Prism assembly is constructed as to provide holographic illusion so as to get required output. Prism Assembly is placed on the display. The receiver will get the video inform of illusion. Thus output of the system will produce a holographic call and provide a realistic effect in video communication.

3.2 PRISM

In optics, a prism is a transparent optical element with flat, polished surfaces that refract light. At least two of the flat surfaces must have an angle between them. The exact angles

between the surfaces depend on the application. Fig.2 is showing architecture of prism assembly.

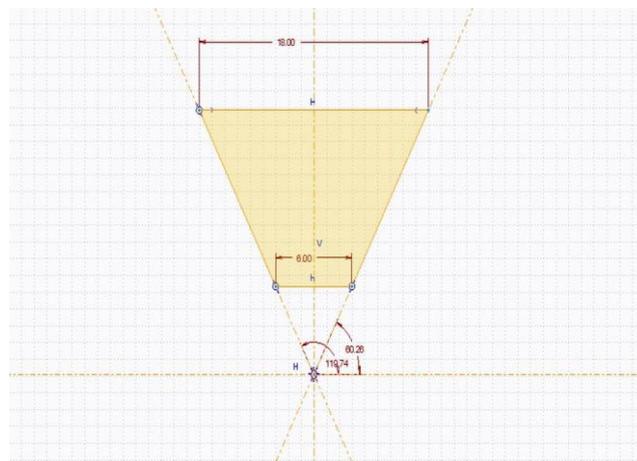


Fig.2 Prism Assembly

4. APPLICATIONS

Virtual conferences: Commercial video conferences will be enhanced by Holographic calling.

Live advertisement: In field of advertisement the Holographic projection will provide realistic view.

Live video streaming: Video streaming will be efficient in providing exact illusion via Holography.

5. CONCLUSION

Video technology moving into the cell phone, which will have ability to transmit information off the cell phone to create hologram, projecting the hologram on prism assembly, a user would be able to visualize calling person. This technology will provide cost effective solution for virtual calling.

6. FUTURE SCOPE

Proposed system contains translation & Scaling & rotation of the 2D image and video call is 2D call projected on quadratic prism. However there is future scope of adding a depth in the 2D visual to get an virtual 3D and other way the capturing can be done in 3D angular and 3 Dimensional cameras these can be used for capturing object in 3D and proposed system will help for conversion in regular call to virtual holography. Thus system can be enhanced for capturing in 3D and projecting in 3d for further enhancement of system.

REFERENCES

- [1] Chenguang Yu ; Dept. of Electr. & Comput. Eng., Polytech. Inst. of New York Univ., New York, NY, USA, Yang Xu, Bo Liu, Yong Liu “Can you SEE me now?” A Measurement Study of Mobile Video Calls”. Date of Conference: April 27 2014 - May 2 2014.
- [2] Reddy B.S “An FFT-based technique for translation, rotation, and scale- invariant image registration”. Issue date: Aug 1996

INTERNATIONAL JOURNAL FOR ADVANCE RESEARCH IN ENGINEERING AND TECHNOLOGY

WINGS TO YOUR THOUGHTS.....

- [3] **Garg, S. ; Ayaya Labs., Basking Ridge, NJ, USA; Kappes, M. "Can I add a VoIP call"? Date of Conference: 11-15 May 2003**
- [4] **"Configuring Virtual Hosts in Geronimo-Jetty". Apache Geronimo Documentation. Retrieved 12 Apr 2011.**
- [5] **Wickesser, Craig (5 August 2009). "Google Chose Jetty for App Engine". InfoQ. C4Media Inc. Retrieved 12 Apr 2011.**
- [6] **"Jetty://". Eclipse. Retrieved 12 Apr 2011.**
- [7] **"Twitter Streaming API and Apache Wink". Issue date: 11 May 2011**
- [8] **"Powered by Jetty". Retrieved 24 Sep 2012.**