3D STEREOSCOPIC VIDEO REALITY AUGMENTED METHOD FOR STREAMING MOBILE TRANSMISSION

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ABSTRACT: Stereoscopic video streamingisa newly technology. Nevertheless, development of displaying technologies and upward bandwidth of the Internet connection with the recent improvements on network physical layers such as fiber-optics and wireless technologies change the course of 3D transmission and displaying technologies. Our proposed reality augmented method is providing high quality of streaming output at the receiver side, although thestereo-videos are having high bandwidth framework packages. So, here the overall transmission time (TT) will be reduced. We are able to send more than some regular transmission packets per cycle, and in this system we are able to transmit unicast or multicast transmission.

Keywords: Stereoscopic, Streaming, 3D multimedia, Rendering

INTRODUCTION

The 3D multimedia isn't a new idea. The initial 3D creation idea is stereo-vision which is additionally very prominent today. Stereo-vision is utilized initially in 1838 with a mirror-gadget by Sir Charles Wheatstone [1]. The principal stereoscopic TV was proposed in 1920s. The primary blast of the 3D in film theaters was in 1950s in the United States of America. The film makers and the theater proprietors endeavored to hold the watchers by presenting 3D motion pictures as a response to the television which is getting mainstream [1, 2, 3]. The second blast of 3D in motion picture theaters occurred in 2000s. The arrival of blockbusters in 3D format upheld this pattern. In 5 years, from 2006 to 2010, the quantity of overall 3D screens are expanded from 258 to 21,936 [4]. Consequently, 3D explores are critical for the film theaters. Given the condition of the 3DTV looks into, the two analysts and industry tries to achieve the cell phone clients in light of the fact that the versatile advances are getting prevalent, and an ever increasing number of individuals begin to utilize cell phones, tablets, and keen gadgets. The smartphone utilization in the US ascended from 36 % to 56 % over the most recent 2 years [5]. The use insights among advanced mobile phone clients demonstrate that the vast majority of the clients use the Internet for web-based social networking and multimedia purposes. With this expanding profile of advanced cell and web clients, the interest for portable 3D multimedia is relied upon to increment. There are diverse works around 3D multimedia conveyance to cell phones. These fundamentally utilize the Digital Video Broadcasting-Handheld (DVB-H) innovation, which utilizes the VHF-III and UHF IV electromagnetic wave band interims. There are a few examinations about gushing 3D multimedia to cell phones over the Internet; nonetheless, these works are not continuous and the vast majority of them requires remaking, an extra computational cost on the collector side [6, 7].

The portable frameworks utilizing DVB-H as their physical medium works in the constant. However, these frameworks require DVB-H transmitters with substantial power prerequisites. The utilization of the Internet as the physical medium could illuminate both the scope and power issues. With a specific end goal to achieve versatile clients, remote web associations, for example, 3G or 4G could be utilized. With the expanding transfer speed, the 3G and 4G advancements, or to be specific EDGE, WCDMA, HSPA, LTE, are increasingly supported by the clients. This headway in portable remote information joins licenses enormous information exchanges among the versatile clients. This is preference against the DVB-H. On the constant viewpoint, the spilling applications which keeps running over DVB-H are generally ongoing. Notwithstanding, there are a few investigations about the transmission of 3D substance to the opposite side over the Internet that does not guarantee ongoing execution [6, 7]. Regardless, these frameworks do not have the help of portable frameworks and they require specific gear, for example, glasses. In this proposed reality augmented technique is giving high caliber of gushing yield at the beneficiary side, in spite of the fact that the stereo-recordings are having high transmission capacity structure bundles. In this way, here the general transmission time (TT) will be decreased. We can send more than some consistent transmission parcels per cycle, and in this framework we can transmit unicast or multicast transmission, too.

LITERATURE REVIEW

In 3D multimedia technologies, the main goal is to find a way to represent the view as it is seen in the real world from all points of view, namely free-view television or display. Even though there are some examples with both hardware [8], and software (with 3D reconstruction) [9], the Free Viewpoint TVs (FTV) are not widely used and are not appropriate to advance into the commercial area in both display technologies and content creation.3D multimedia technologies are a cornerstone in the way to reach the free-view television. The developments in the 3D multimedia paves the way in both displaying technologies and the content creation aspects. Even though 3D TVs are becoming widespread in the last few years, very large portion of the newly created 3D content originates from 2D content. Forthese reasons, 3D multimedia is still a hot topic for research. Stereoscopy means solid seeing (stereoV - solid and skopew - to look) as Fehn stated [10]. In order to see the objects in their solid form, the stereoscopic view is required due to different depth cues explained in previous section. In stereoscopy, two different eyeballs acquire two different images. In order to make this operation possible, different displaying methods can be used. The main division is done as the displaying methods by the main principle of creation of 3D depth sense such as binocular, holographic, and volumetric.The first binocular

display was the Wheatstone mirror stereoscope [10, 11]. This device uses two mirrors for two eyes in 45form. Another early example of binocular display is the Brewster stereoscope which was a special kind of glasses that the images are attached in front of the glasses [11]. Most binocular display methods use multiplexing methods for displaying. In these methods, mostly active or passive glasses are used [12]. In wavelength-division or color multiplexing method, stereo image pair is combined by overlaying onto each other by using different/non overlapping wavelength colors.The volumetric displays are rotating plane with a projector to display accurate 3D display [13], a full parallax display with rotating mirror and the projection from the top of the system [14], and a cylindrical display for the delivery of the 3Dcontent [15].

Overview of our system,

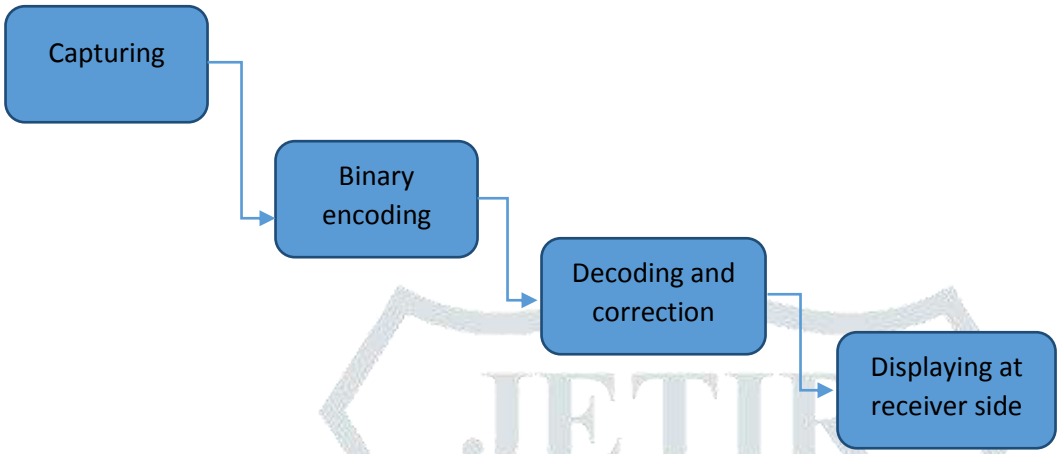


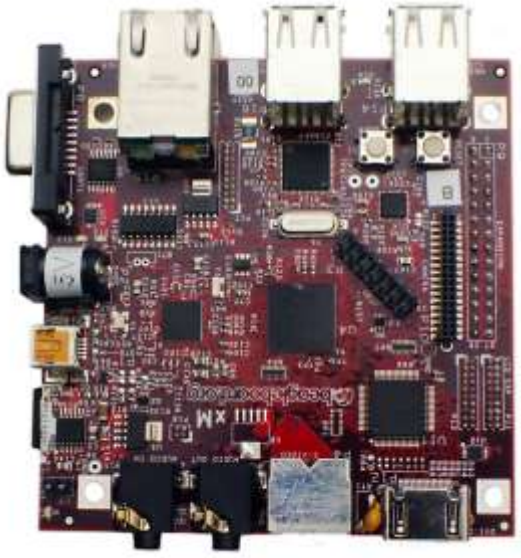
Figure denotes Overview of the proposed system

Capturing

Catching of the pictures is led by using two USB web-cameras. By associating the USB cameras to the BeagleBoard-xM by means of the USB ports, cameras can be utilized for picture catch process. Keeping in mind the end goal to catch pictures, a C++ code is composed in light of Video for Linux (v4l) library of the Linux working framework. This program drives the two cameras and takes the pictures in YUV4:2:0 examining structure. Keeping in mind the end goal to utilize this program, the accompanying order ought to be entered to the support.

$. /luv -s 2 -c 100000

After the acquisition of the frames, both frames are stitched together in side-by-side formation. The code snippet which is used for both capturing and processing the obtained frames.



A Picture of the BeagleBoard-xM from Top

Compression:

So as to bring down the bitrate and send more information over the Internet, the procured video outlines must be compacted. After the sewing, the casings are converted into one edge and the subsequent edge is compacted by utilizing the H.264/AVC Stereo SEI Message encoding technique. This strategy is decided for the conveyance, on the grounds that there are no open-source multiview MVC encoding and unraveling programming on the collector side gadget which utilizes Android OS. The primary reason for existing is to utilize a proficient and back-perfect pressure standard. The H.264/AVC is a usually utilized video pressure standard. For H.264/AVC there are many open-source encoders and

decoders on both transmitter and collector stages. The pressure is finished utilizing the x264 module of the VLC Media Player. The parameters are given in the x264 CLI command which is given:

```
$ x264 --profile main --keyint 8 --bframes 0 --qp 26 --frame 752 --psnr –me
dia --subme 1 --no-chroma-me --merange 32 --ref 4 --deblock 0:0 --weightp
0
--no-weightb --no-cabac --no-progress --output [outputFile] [inputFile]
```

In the transmitter side, the cvlc is used for encoding which uses an x264 encoder plug-in. The input is acquired by piping the previous step's output as in YUV 4:2:0 format. The encoding parameters are entered as they are given in x264. Resulting command for the console is given:

```
$. /luv -s 2 -c 100000 | cvlc - -vvv --demux rawvideo --rawvid fps 10
--rawvid-width 320 --rawvid-height 120 --rawvid-chroma i420 --sout
'#transcode{vcodec=h264,acodec=none,vb=300,venc=x264{profile=main,
Keyint=8, bframes=8, qp=26, b-adapt=0, bpyramid, no-cabac,no-weightb,
ref=3} ,width=320, height=120, fps=10, ab=5, deinterlace}'
```

Streaming:

The best one is to utilize parcel exchanged Internet spilling in a remote channel medium for a portable transmitter stage. HTTP video spilling on the TCP transport direct is used in the video gushing part because of various points of interest, for example, the dynamic correspondence channel for criticism and the versatile transmission qualities. With a specific end goal to stream the compacted video, VLC Media Player, an open-source programming conveyed by Videolan people group, is utilized as spilling server. The parameters of the gushing are as per the following:

"...: http {mux=ffmpeg{mux=flv},dst=:8080/} "

After that addition to the cvlc command, the final form of the required command which will be entered to the console becomes as follows:

```
$ ./luv -s 2 -c 100000 | cvlc - -vvv --demux rawvideo --rawvid fps 10
--rawvid-width 320 --rawvid-height 120 --rawvid-chroma i420 --sout
'#transcode{vcodec=h264,acodec=none,vb=300,venc=x264{profile=main,
keyint=8, bframes=8, qp=26, b-adapt=0, bpyramid, no-cabac,no-weightb,
ref=3} ,width=320, height=120, fps=10, ab=5, deinterlace}:http{mux=
ffmpeg{mux=flv},dst=:8080/}'
```

For that, the RTSP, RTP and HTTP video spilling protocols are analyzed in a full chain test. The most helpful video gushing protocol is resolved as HTTP. There are distinctive purposes behind that, for example, keeping a dynamic TCP association between the gadgets so as to comprehend the transmission arrange qualities. These attributes are essential for breaking down the channel conduct and the apparent video quality level can be evaluated by utilizing the system qualities. By achieving the system parameters, the video gushing can turn into a versatile procedure and the entire framework acquires more proficient state.

Receiver Side:

In our framework, the receiver should be a proficient, capable and cell phone. A gadget running Android OS with high preparing capacities is utilized on the recipient side. HTC Evo 3D advanced cell, the portable recipient stage, has diverse preparing abilities, for example, the 1.2 GHz Snapdragon S3 Dual Core, 1 GB RAM, 4 GB eMMC stockpiling, Qualcomm Adreno 220 GPU and switchable autostereoscopic show using parallax boundary. Distinctive sensors, for example, accelerometer, spinner, advanced compass, nearness sensor, and surrounding light locator that can help the client experience and media conveyance strategies additionally exist on the beneficiary stage. The autostereoscopic screen of HTC Evo 3D permits 3D content conveyance from a light, portable and effective gadget to the end-clients with high caliber.

Rendering and Display:

Keeping in mind the end goal to convey the 3D substance to the client, some rendering of the obtained uncommon video stream must be directed. HTC Evo 3D can render put away perfect video documents with the casing pressing information on metadata SEI is set as one of the next to each other, top-base, or intertwined. Be that as it may, those recordings must be put away either on the SD card of the advanced mobile phone or on the transitory memory in a dynamic download from a far off put away area. There isn't any stereo media player equipped for 3D rendering for live gushing recordings. Keeping in mind the end goal to finish the framework chain, the rendering of the procured stream must be finished. For that, an open-source media player, VLC Media Player for Android, has been altered and introduced on the beneficiary stage.

For the rendering part, HTC Open Sense SDK has been utilized for its Stereoscopic 3D API [13]. In order to utilize the rendering by using the Stereoscopic API, the following steps must be done on the given order:

- A new project should be started or imported on any Android development environment
- The JAR library of the HTC Open Sense SDK must be imported into the Android project
- A code snippet with enableS3D(true, holder.getSurface()) should be added in the source code
- The project should be compiled and installed on the device

After the adjustment on the VLC Media Player for Android, the player works for just given (i.e. one next to the other) picture format and changes over any edge into 3D expecting its framepacking format is one next to the other. Consequently, recipient gadget HTC Evo 3D begins rendering upon begin and the parallax boundary between the LCD and the eyewitness is actuated. Finally we are getting high quality of stereoscopic videos.

CONCLUSION

In 3D multimedia frameworks, catching the scene and speaking to the rendered picture is a fragile issue. Multimedia encoding by utilizing an embedded low power device can be hazardous because of the inferior figuring energy of installed embedded platform. With a specific end goal to locate the most proficient encoding technique, tests are led on a portable stage. In this work the reality augmented strategy is created for high caliber of spilling yield at the recipient side (mobiles), despite the fact that the stereo-recordings are having high data transmission system bundles. In this way, here the general transmission time (TT) will be diminished. We can send more than some normal transmission parcels per cycle, and in this framework we can transmit unicast or multicast transmission, moreover. The apparent video quality by the end client is an essential factor in all multimedia spilling frameworks. Improvement of a completely practical 3D video quality estimation metric can be a decent course for the future research.

REFERENCES

[1] Jones, I. McDowall, H. Yamada, M. Bolas, and P. Debevec. Rendering for an interactive 360 light field display. In ACM Transactions on Graphics (TOG), volume 26, page 40. ACM, 2007.

[2] Smith. Smartphone ownership – 2013 update. inPewResearchCenter, http://www.pewinternet.org/~/media/Files/Reports/2013/PIP_Smartphone_adoption_2013.pdf, June 2013. [Online; accessed 15-August-2013].

[3] Sullivan. Depthcube solid-state 3D volumetric display. In Electronic Imaging 2004, pages 279–284. International Society for Optics and Photonics, 2004.

[4] Fehn. 2D TV Broadcasting, pages 23–38. John Wiley & Sons, Ltd, 2006.

[5] Fehn. 3D TV Broadcasting, pages 23–38. John Wiley & Sons, Ltd, 2008.

[6] Brewster. The stereoscope: Its history, theory and construction. 1856.

[7] Lamboray, S. Wurmlin, and M. Gross. Real-time streaming of point-based 3D video. In Virtual Reality, 2004. Proceedings. IEEE, pages 91–281. IEEE, 2004.

[8] J. Belton. Digital 3D cinema: Digital cinema's missing novelty phase. Film History: An International Journal, 24(2):187–195, 2012.

[9] K. Fliegel. Advances in 3D imaging systems: Are you ready to buy a new 3D TV set? In International Conference on Radioelektronika (RADIOELEKTRONIKA), pages 1– 6, 2010.

[10] L. Onural, T. Sikora, J. Ostermann, A. Smolic, M. R. Civanlar, and J. Watson. An assessment of 3DTV technologies. In NAB Broadcast Engineering Conference, pages 456–467, 2006.

[11] M. Tanimoto, M. Tehrani, T. Fujii, and T. Yendo. Free-viewpoint TV. IEEE SignalProcessing Magazine, 28(1):67–76, 2011.

[12] N. S. Holliman. 3d display systems. In J. P. Dakin and R. G. W. Brown, editors, Handbook of Optoelectronics. IOP Press, 2006.

[13] S. Shi, W. J. Jeon, K. Nahrstedt, and R. H. Campbell. Real-time remote rendering of 3D video for mobile devices. In Proceedings of the 17th ACM international conferenceon Multimedia, pages 391–400. ACM, 2009.

[14] T. Replay. freed free dimensional video.

[15] T. Yendo, T. Fujii, M. Tanimoto, and M. PanahpourTehrani. The seelinder: Cylindrical 3D display viewable from 360 degrees. Journal of visual communication andimage representation, 21(5):586–594, 2010.

[16] Kalaivanan, M., and K. Vengatesan. "Recommendation system based on statistical analysis of ranking from user." International Conference on Information Communication and Embedded Systems (ICICES), , pp. 479-484. IEEE, 2013.

[17] P. Sanjeevikumar Vengatesan K, R. P. Singh, S. B. Mahajan," Statistical Analysis of Gene Expression Data Using Biclustering Coherent Column", International Journal of Pure and Applied Mathematics, Volume 114, Issue 9, Pages 447-454