Interactive Co-presence situation with Mixed Reality Using Remote and Local Avatar

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1. INTRODUCTION

In ancient direct communication vogue in planet, users will share the reference system part in common in time period once communication and interacting with one another. Current widespread web communication applications and systems have already provided the practicality of communication reciprocally in time period over web with users. However, there area unit still no good solutions to produce practicality of sharing the reference system part in common in time period over web. Therefore, in our analysis we have a tendency to tried to use mixed reality thought, time period motion capture technology, 3D(3-dimentional) virtual setting that simulates the important setting as a medium, and mix them with web area to create a mixed reality interactive setting which might offer the practicality of sharing the reference system part in common in time period over web with users. Through this approach, users area unit able to contribute their socially relationship a lot of deeply closely through web area, just like the type of direct communications occurred in planet.

2. ANALYSIS BACKGROUND

A. gift widespread Communication strategies with Internets
In recent years, with the speedy development of ICT(information and Communication Technology) technologies, the socially communication designs between users is being evolved day and day, users will be concerned into totally different communication designs over web area in indirect communication forms, there area unit countless applications emerged recent years, and a few of typical applications will be mentioned here. SNS(Social Networking Service) applications like Facebook [1], Renren [2], Mixi [3], Google+ [4], Twitter [5], Weibo [6], VoIP(Voice over web Protocol) service applications like Skype [7], IM(Instant traveller) service applications like MSN Messenger [8], on-line picture sharing service applications like Flickr [9], E-mail service applications like Gmail [10], MMO(Massively Multiplayer Online) social community service applications like Second Life [11] and PlayStation Home [12], journal services applications and lots of different similar applications. These web communication applications do offer users a lot of selections and possibilities to socially connect with different users deeper and a lot of nearer, and conjointly brought a lot of vivid communication part into real society. Through these web communication applications, users will get countless fun throughout the indirect communication processes over web area.

B. Communication Tendency over web Through gift widespread communication applications with web, users will communicate with one another over networking virtual world tho' the users don't seem to be truly at a similar area in planet. However, the normal direct communication vogue in planet that users share a similar reference system part in time period whereas talking and interacting with one another remains the foremost effective communication vogue for users to contribute their socially relationship. Therefore, to satisfy the wants of users, nowadays, there area unit a lot of and a lot of web communication applications emerged that area unit totally different with those appeared in past years, the options and goals of those new web communication applications don't seem to be simply offer the indirect communication vogue over web area with users, the foremost vital motivation of those web communication applications is making an attempt to induce users from indirect communication vogue that happens solely in network area to ancient direct communication vogue which will lead users do communications in planet and share a similar reference system part in time period as Ken Ohta aforesaid in his paper [13]. There have already emerged countless such applications, a pair of typical examples will be mentioned area unit Facebook Places [14] and Foursquare [15], by checking the placement data of users in planet, users might get to grasp if the place and space round the users situated have the other users' friends, members of the family or schools. Thus, it becomes potential to travel to the places in planet to try to to ancient direct communications. From these emerged new web communication applications, {we can|we will|we area unit able to} discover that the event of web communication applications is wordlessly ever-changing from that are completely utilized in network virtual area as indirect communication forms to making an attempt to induce users into direct communication designs as in planet in some extend. Nowadays, there area unit countless connected on

researching systems regarding a way to induce users from indirect communications over network area into direct communications occurred at places in planet a lot of swimmingly and actively. like light-weight footprint system that is an internet personal affiliation presentation system for communication help projected. light-weight Footprint system makes an attempt to create use of the activity history of users within the house and combined the concrete time that users fresh within the house by victimisation differing types of footprint icons projected by projector to tell the users' past and current location data and even predict future location data of different users. Through light-weight footprint system, it became potential to induce users from indirect communications in virtual world into direct communications at places in planet through the hints of footprint icons. However, {we will|we will|we are able to} see that tho' these emerged web communication applications and on researching systems can effectively induce users from indirect communications in virtual world into direct communications at places in planet a lot of swimmingly and actively, there's still a barrier wall exists between indirect communications in network virtual world and direct communications in planet. Users still cannot get a similar feelings and experiences as direct communications and socially interaction occurred at places in planet whereas over network virtual world. tho' VoIP and Tele-presence meeting systems will offer the experiences that they're truly talking reciprocally in real time, these systems cannot offer the experiences that they're "EXISTING" within the same area, as a result of users UN agency don't seem to be within the area at that real time cannot walk around within the area, do communications and interactions supported the important reference system part of the area and master the time period location data of different users. In different words, current web communication applications and on researching systems don't seem to be able to contemplate time period reference system parts and supply communications and interactions with users supported spacetime parts of planet in time period. tho' some web communication applications and on researching systems will offer time period communications in types of dialogue with users over network area, like IM(Instant Messenger) applications, VoIP, and telepresence meeting systems, they can't offer any time period reference system interaction parts with users, which might create the communications as direct communication occurred in planet. In direct communication vogue in planet, users will walk around within the area whereas communication with one another supported the time period reference system parts.

3. CONNECTED SERVICE SORTS AND SYSTEMS

A Network Communication Servive sorts
1) E-mail, IM Applications

A. E-mail
E-mail like Gmail is an efficient methodology to switch letters by victimisation ICT technologies, the invention of E-mail with success reduced the time for message causing, that is that the most vital communication price whereas communicate between so much distances.

B. IM Applications
IM (Instant traveller) applications like MSN Messenger will offer users with chance of frequent message exchanging in an exceedingly type of 0.5 time period. If user checks that every different is on-line, they will send instant messages to every different, the communication vogue is analogous with dialogue occurred in planet. tho' the degree of time period is under dialogue happened in way of life, the timeliness of IM applications is superior to E-mail.
2) VoIP, Video VoIP

A. Voip
VoIP (Voice over web Protocol) applications like Skype will offer users with real time on-line communications. tho' the perform of VoIP is that the same with ancient phonephone, VoIP will let users currently whether or not one another is on-line or offline before dialing, ancient phonephone cannot offer users with such communication vogue. In different words, before dialing to different user, the user will get a kind of real time data that is that whether or not user in so much distances is on-line or offline, from now of read, VoIP has evolved whereas compared with the communication type of ancient phonephone.

B. Video voip
Video VoIP applications like Facetime [16] will offer users with real time on-line video communications. Real time on-line video communication could be a progress whereas compare to VoIP, the progress of network communication speed, and also the development of digital image recognition and process technologies accomplished Video VoIP. By victimisation Video VoIP applications users will see a vicinity of time period scene of every other's place whereas communication. this can be an imperative part of communication occurred at same area in planet.

2) Social Network Services, Location Aware

Social Network Services

A. Social network services

Recent years, the emerged social network services like Facebook converged the functions of E-mail, IM applications, VoIP and Video VoIP, and supply new options with social parts, like instant comment, instant photos uploading and virtual communities. The emergence of social network service step by step let communications occurred in network virtual area became a a lot of vital role to contribute socially relationship.

B. Location aware social network services

After ancient social services emerged, recently with the event of location data detection technologies like GPS (Global Positioning System), location aware social network services like Facebook Places and Foursquare emerged. the foremost evolved a part of location aware social network services is that, user will command the 3D (3-dimension) location data of himself or herself and different users', and communicate with different users by victimisation the placement data. It makes communication a lot of vividly in network virtual area. a lot of import factor is, it will induce users from indirect communication that happens solely in network virtual area to ancient communications happens in in planet by merely checking if there area unit some friends or members of the family round the same space. In fact, time period location data is an imperative part of communication occurred in planet.

C. Social democratic Simulations

1) MMO Community Recent years,

Besides MMORPG (Massively Multiplayer on-line Role-Playing Game), MMO Community is turning into a lot of and a lot of popular on-line users. MMO Community applications alter multi-users participate in social activities in an exceedingly completely on-line 3D virtual setting like Second Life and PlayStation Home. In connected analysis filed, Digital town urban center [17] will be mentioned.

2) Multi-agent Simulation

By creating multi-agent simulation, users will be part of social activities in 3D virtual area that simulates the important world, by this implies, user will be part of social activities because the same type as accomplished in planet. User's identification in planet is conducted as agent avatar in virtual world, and every one the actives of agent avatar acted in 3D virtual world is controlled by data input device like keyboard. As a connected analysis, FreeWalk [18] will be mentioned, and also the increased Experiment had be conducted [19].

4. PROJECTED SYSTEM

A. Technology Background

1) Mixed Reality thought

Milgram Paul foremost outlined the Reality-Virtuality (RV) time diagram [24] in one994 as shows in Figure 1, he showed that there was a not crossroads between reality and virtuality, the world between reality and virtuality was thought-about not as distributed type, however as time type. thus Mixed reality space will be seen because the whole area unitas that are between the beginning purpose of reality and virtuality. The projected system used the thinking of mixed reality thought to alter users in several places enter a 3D virtual setting that swimmingly joined the important world and virtual world by victimisation time period motion capturing data from planet and 3D virtual area that proportionately simulates real area as a medium.
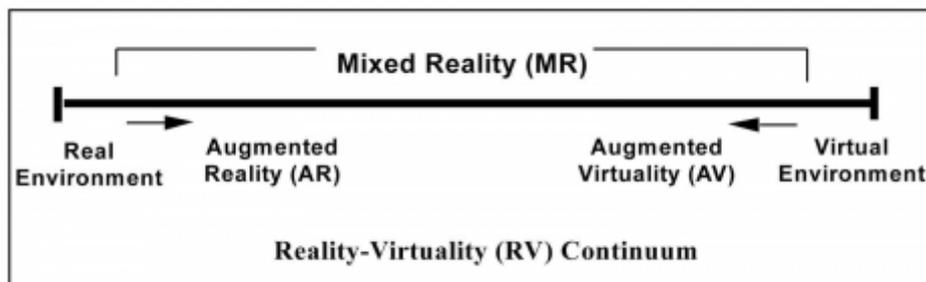

Fig:-1 Milgram Paul's Reality-Viruality (RV) Continuum

A. Time period motion capture

The projected system uses time period motion capture technologies to capture user's time period motion data, and synchronize the action created by user in native real area with the action of that user' avatar in 3D virtual area. By this implies, the system will bring users into a a lot of swimmingly and seamlessly mixed reality interactive setting between

planet and virtual world with state of mind of that they're dominant the avatar by data input device, as a result of there's no would like for unwellness input devices. native users' time period action is integrated into avatar.
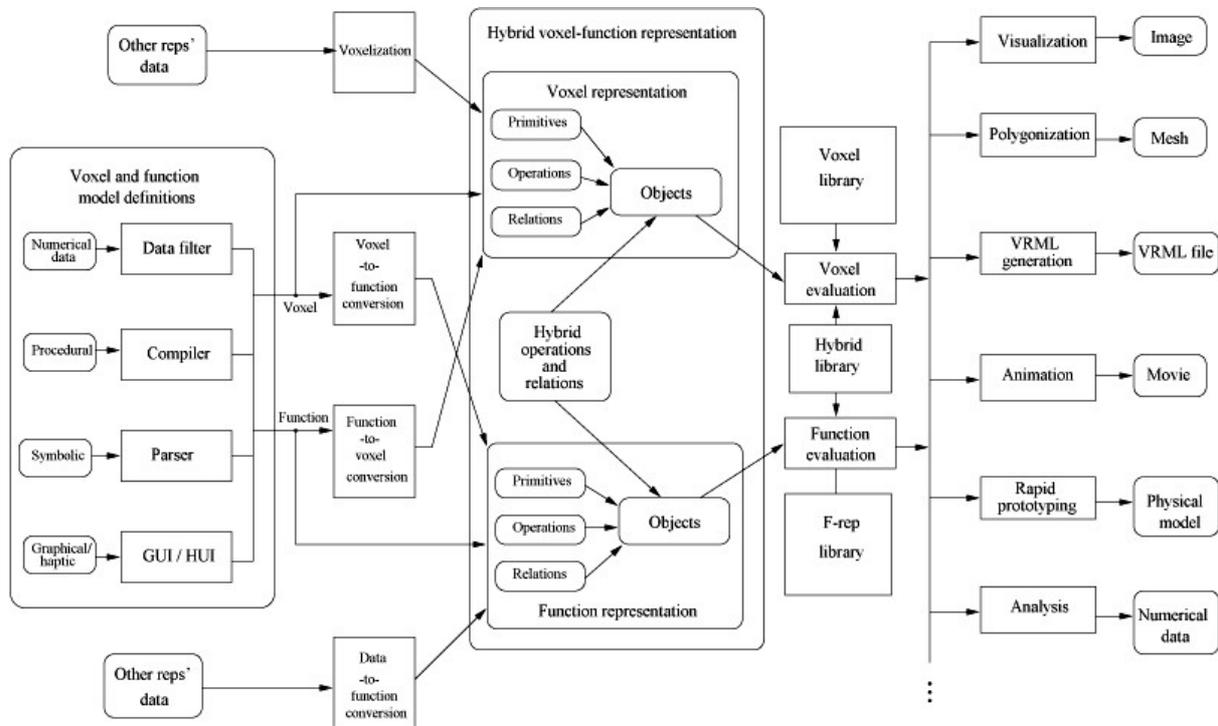

Fig:-2 Architecture for Proposed System

B. Proportional 3d area for real area

The projected system conjointly created things around real area in 3D model type and engineered a 3D virtual area that simulates the native real area in proportional type. The 3D virtual area is been designed as a medium to swimmingly and seamlessly connect action of user in native place and user in remote place. The remote user will command the total condition in native area within the 3D virtual area by dominant his or her avatar. The 3D virtual area is been designed as a medium to administer a a lot of swish and seamless two-way communication between real area and 3D virtual area.

B. System style

1) PROJECTED SYSTEM: HYBRIDI

To contribute a mixed reality interactive setting that provides users with the sentiments that they will share a similar area in real time tho' they're communication and interacting with every over the network virtual area, our methodology is delivery a MiRA (Mixed Reality Agents)[25] avatar as different self of the user UN agency isn't within the native area, and also the MiRA avatar will act because the user communicate and act with the user in native area. Through this approach, the 2 users will acquire the sentiments that they're sharing a similar area in real time.

2) DESIGN FOR PROJECTED SYSTEM

The system structure and design area unit shown as Figure2 and Figure3. The user in remote area in planet can act his or her self as MiRA avatar by dominant it in an exceedingly 3D virtual world simulating the important native area in proportional type, in the meantime the user in native area can use a projector as a screen to seek out the MiRA avatar of remote user to speak and act with the MiRA avatar.

5. CONCLUSIONS

Under the background of gift web communication applications cannot offer enough direct communication sense by sharing reference system part in planet in time period with users, we have a tendency to projected a mixed reality interactive setting system known as HYBRIDi. projected system targeted on 2 of reference system part sharing issues that remote user will hardly share native user's time period motion and may hardly get area interactivity with native area. to unravel the 2 issues, we have a tendency to projected a mixed reality interactive setting by victimisation ideas of time period motion capture technology and 3D virtual world proportionately simulating planet, and convey users' avatar into the setting to share the reference system part. we have a tendency to conjointly investigated options of connected

applications and works, and compared projected system with them. moreover, we have a tendency to conjointly analyzed the link between avatar and automaton. Through all the comparison, finally we have a tendency to get the conclusion that projected system resolved the higher than 2 issues, and may offer a lot of reference system part of planet into users' virtual world communications.

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