3D INTERNET

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ABSTRACT-

Internet, these days has become an integral and necessary part of our lives. WWW at first was a small and non-interactive information storage service is now vast and valuable. Present activities being partly or fully connected with the virtual world are often optimized to a much better level. each activity related to our life style is mapped and associated with some entity within the digital world. Humans has seen immense advancements in web and in 3D stereoscopic displays. Time has come merge the two to deliver a latest level of expertise to the users. 3D Internet is a thought which is yet to be implemented and needs browsers having the property of depth perception and AI . If this property is incorporated then the thought of internet of things will become a reality.

Keywords*: Internet; 3d; depth perception; Internet of things; augmented reality; applications; Avatar.*

INTRODUCTION

The topic 3D internet in web 3.0 is one amongst the foremost necessary technologies world is looking forward to. Generally, we have tendency to do our things manually within the way of life, which might be same to be in the form of 3D. However once it comes to internet we are actually using it in the form of 2d rather than 3D, therefore this idea i.e. 3D internet helps in achieving that. 3D internet, also known as virtual worlds, could also be added benefit for you to reach business men, customers, co-workers, partners, and students. It combines the immediacy of television, the versatile content of internet, and so the relationship-building strengths of social

networking sites like Facebook, twitter Second Life is one such resource that is implementing the thought of the 3D internet in its applications.

The 3D internet (3DI) is the set of 3D virtual and mixed reality worlds within the net. Here, users will experience, use and share with others for numerous applications.

The internet from onset may be a 2D internet as a result of most of the graphical user interface (GUI) at this stage are two-dimensional. The 3D internet use of 3D graphical user interface (GUI) that makes it's a strong new means for reaching shoppers, business customers, co-workers, partners, and students, and is inherently interactive and fascinating. Virtual worlds offer great 3D experiences that mirror real world . Almost **something within the world is reproduced within the 3D internet with the additional advantage** As a result of which everyone will experience it from the comfort of their home or office(workplace).

History of Web

Web 1.0, 2.0 and 3.0 are the 3 stages that describe the development and improvement of internet over the ages.

- Web 1.0

This was the primary model of internet. individuals could only browse content shown on the screen on-line which is provided by a small number of developers. Users could not upload or give their content on the net. This can be merely termed as "read only" sort of web. Web 1.0 had several limitations and restrictions that had been solved later by web 2.0

- Web 2.0

Early internet might solely be used to retrieve info from the internet however with the introduction of web 2.0 users can transfer their content similarly web finally gave users the chance to give their individual contributions to the world. Web 2.0 encourages participations, collaboration and data sharing For e g. Social networking sites like Orkut and Facebook ,email began at this stage. Individuals can now add their profiles photos to such websites. Blogs and forums which is now a typical part of the digital world

- Web 3.0

Web 3.0 is additionally referred to as third generation of world wide web. Above 2 versions of internet, info was primarily generated by individuals. In web 3.0 information is processed and regenerate to data by the net itself. It'll give the users with related suggestions and

recommendations based on their web activities (e g youtube). Web 3.0 contains of on-line integrated ,e-learning , gaming, and business presentations and avatar illustration. it's essentially a true time artistic internet.

- 3D Internet

3D web will be referred to as the combination of internet and 3D graphics. The results of such a mix are interactive and real time 3D graphics all delivered through the web. It's the simulation of a 2d web page in true to life graphics. Sections of web that we tend to use nowadays come beneath the category of web 2.0 and web 3.0. Succeeding form of web takes user interaction and 3D experience to a full new level. This kind is usually so lively that it's considered as virtual reality. 3D internet is pictured as a virtual world.

Literature Review

Tansu Alpcan, Christian Bauckhage, Evangelos Kotsovinos Deutsche Telekom Laboratories (2007) in their article ,"Towards 3D Internet: Why, What, and How?" published in International Conference on Cyberworlds explains the 3D concepts and discuss why it is a goal worth pursuingThey further also explain overview of 3d internet discussed the motivation behind it as well as the specific research directions in the fields of networking, security,distributed computing, and machine learning. The emerging 3D applications and desktop paradigms, increasingly interactive nature of the Web 2.0, the Semantic Web efforts, widespread availability of powerful GPUs, popularity of novel input devices, and changing demographics of Internet users towards the younger, computer-literate generations, all provide the basis for the 3D Internet evolution.

Mrs.G.Sumalatha1 & Mr.S.Bharathiraja2(2013) in their article "A Survey on 3D Internet in web 3.0" publish in "International Journal Of Engineering And Computer Science ISSN:2319-7242 analyze how 3d internet is used in present and future .And also explains the concpt of second life second Life is an online virtual world,The virtual world can be accessed freely via Linden Lab's own client software or via alternative third-party viewers

Chhaya Mehar, Rakesh Patel, Srishti Mishra (2014) in their article"A study and future of 3D Internet" published in "International journal of Engineering Sciences and Research Technology" implemented 3D Internet against 2d technology and presented 3D Methedology.

In this paper an attempt is made to collect,review and evaluate the related existing technology with the aim to give research directions towards redesigning the Future Internet.

Melvin Thomasa , Gireesh Singh Thakurathib , Haresh Savlanic , Vipul Sankhed (2016) in their article "3D Internet"published in International Journal of Computer (IJC) explains history, future prospects, current status, benefits, implementation methods.They further explains the need of ubiquitous and intelligent Internet.The team explains the obstacles like Internet bandwidth, hardware, cost factors and lack of research it isn't easy to implement

Shalini Gupta , Arushi Garg , Kaveri Parashar Student (IT), JSS Academy of Technical Education Noida, India(2016) in their paper they have provided with an overview of concept of 3D internet i.e. also known as virtual worlds, They have also discussed the motivation behind 3d Internet and specific research directions in the fields of networking, security, distributed computing, and machine learning.

Problem Definition

For most of its users the internet is a familiar, comfortable medium where we communicate with one another, get our news, shop, pay our bills, and more. we are so much accustomed and dependent on its existence that we don't think about its nature anymore just like we do not think about Ohm's law when we turn on the lights.

However, if we stop and start think about the nature of the internet| for an instant we notice that it's nothing but a virtual environment (cyberspace) where individuals and organizations interact with one another and exchange data.

Once this reality is well understood, the question are often turned on head that "why do we limit ourselves to 2d pages and hyperlinks for all these activities?"

Navigating hierarchical information structures is usually cumbersome for large data sets.

Unfortunately, the internet as we all know is organized as a flat abstract mesh of interconnected hierarchical documents.

A typical 2d web site is a very abstract entity and consists of nothing but a bunch of documents and photos. Inside the web site, at within level of the interaction, the developers have to give the user immediate direction facilitate. Otherwise, the user would drift sooner or later.

Although the domain name system is somewhat useful, using the web these days is no different than reading a telephone book.

Everyone knows and uses it. We spend our life in a 3D world navigating between places and organizing objects. We infrequently need search engines to find what we are looking for and we naturally adapt at remembering spatial relationships. Let us consider the below scenarios on 3D internet instead of a flat 2D

Instead of a flat 2d desktop I will place my documents on my desk at home, where documents, desk, and home are "virtual" entities that are 3D representations of real-world counterparts with spatial relationships. Later, once the necessity of finding these documents arises, there's a high probability that I will simply keep in mind their location while not resorting to extra processes like search engines or a "recent documents" folder.

Objective

The objective of this paper is to bring the idea of the Internet of Things to life and make it a reality. In this paper, in addition to our solutions and applications, we also mentioned the history of the Internet, applications, architecture, new 3D Internet implementation and other traditional topics and some unique concepts such as depth perception with artificial intelligence, 3D Internet with Internet of Things and augmented reality. Through this work, we aim to provide a clear understanding of 3D Internet and their associated potential benefits, which is clearly worth

Architecture of 3D Internet

In computer technology, an avatar (also called a profile picture or user picture) is a graphical representation of a user or persona or character. It can take a two-dimensional form, such as icons in Internet forums and other online communities, or it can take a three-dimensional form, such as in games or virtual worlds.

Generally speaking, an avatar is an image of a person or an idea. However, in the computing world, avatars specifically refer to roles that represent online users

Fig.1: 3D world Avatar

[source:https://www.researchgate.net/figure/3D-world-interfaceSource-Pirkola-2012-The-historical-development-of-interface-is_fig1_320663935]

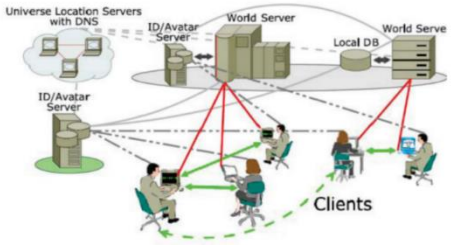

Fig.2 : Architecture of 3D Internet
[source:https://www.researchgate.net/figure/A-graphical-depiction-of-the-proposed-3D-Internet-architecture_fig1_4294764]

The 3D Internet concepts shared by its predecessor include open and reliable architecture, open attributes, availability of the core of the network, higher intelligence at the edge, and isolated applications. Users navigate the 3D network and use transmission to move between the world or independent services. The website is the opposite of the two-dimensional Internet. We have www, website, and subdomains.

• World servers.

It provides users or administrators with generated, fixed and active content that clearly defines the location (3D atmosphere), physical machines, avatar funds, and hypermedia information of the website they represent, as well as client and server The sequencer provides many other attributes. Servers all over the world are facing the urgent task of balancing current and connecting users and communicating with each other to ensure space. Consistency on the real machine. They are also used to provide various other services, such as e-mail, instant notes, downloads, fast downloads, etc.

• Avatar/ID server.

A customized computer system, including identification materials and avatars, and the account of the designated employer. All of these provide an environment in which the information on the world server and a single server is confidential and secure

• Universal location server

The system used for virtual management is the same as (DNS). This DNS is used to provide information about virtual geography. (ULS) can also act as an identity and user server distributor.

• Client

programs that run on the user's system, such as Browsers that require caching, network, and 3D functions to run on the system. Some additional programs are needed to support 3D functions, such as Software editing and website hosting on the client system. The discovery of new software development tools and kits aims to solve this problem.

Research Methodology

Glimpse into 3D Virtual World

3D internet is yet to achieve it's full potential however virtual world's like "Second Life" have made a trial to avail 3D options to traditional internet. Second life is a 3D world created by Linden research laboratory where everyone the user meets is a real person and each place the user visits is made by developers .The platform additionally provides users with optic Rift that helps the user experience the 3D effect. using this hardware, the user can relish a full view of the virtual world. it's options like head tracking and motion sensing, users no longer suffer from 2d boxed visions on their regular LED/LCD displays. Linden research laboratory has taken care that their stereoscopic view of second life doesn't leave the users with motion sickness, thanks to the motion tracking features and quick response to minute movements. Users will choose from first person and third person view. first person view will create the experience more realistic as individuals will see the world from their avatar's perspective.

3D Internet Meets the net of Things (IoT)

Today's internet isn't restricted to our laptops, smart phones and tablets. Everything (living and non-living) having a distinct IP address, which can be identified uniquely can be considered to be a part of this large network various embedded systems are currently accessed via internet and are capable of data transfer and this concept is termed a IoT(Internet of Things). Electronic appliances, lights in home and industrial environment, speakers, vending machines, cars, thermostats, security systems are all examples that fall within the scope of internet of Things. In future IoT can be combined and mostly benefited by the onset of 3D internet. Avatars in 3D internet would be more realistic and could be considered because the similitude or duplicate model of the user himself. so with the mixture of "3D Internet" and "Internet of Things" a lot can be achieved

Augmenting Reality with 3D internet

Abbreviated as AR, augmented Reality is a form of virtual reality that aims to replicate the world's environment in a computer. The augmented reality system creates a composite view for the user that is a combination of the real scene seen by the user and the virtual scene generated by the pc that augments the scene with extra data or information . The virtual scene generated by the pc is meant to boost the user's sensory perception of the virtual world they are seeing or interacting with . The goal of augmented reality is to create a system in which the user cannot distinguish between the real world and virtual reality. several augmented reality software system have already surfaced. but these applications are only created for devices that manufacture 2d output. when we think of our surroundings, we think in 3D, we experience the world in 3D, therefore augmenting the world and showing the output in 3D makes a lot of sense. If 3D internet is implemented several devices having 3D displays can surface and developers can start making augmented reality applications for such devices. Such devices can manufacture much more realistic view of the reality that we are attempting to augment. The function of the software system will remain same in both the cases, however because we are receiving a 3d view, it will be rather more realistic. additionally it will facilitate us perceive the augmentation clearly. In short, we'll be augmenting reality and it will be in 3d, therefore the result after augmentation should also be 3d.

Depth perception with artificial intelligence

The conversion of webpages, graphics and images using artificia intelligence .Imagine a browser that can think, a browser that doesn't need input all the time like the current browsers we use. A Browser smart enough to understand the difference between two colors, and the difference between the depth of two objects. Such a browser is quite capable of understanding the static image that is displayed on the screen, if the objects in it are near or far from the observer. As browsers are becoming more and more self-adaptive and responsive to customer needs, you don't have to worry about general issues like screen resolution, platform dependency, etc. etc. Similarly, a 3D web browser may cooperate with an additional feature to store the estimated depth or height of a specific entity. These values will be entered by the person hosting the website or the browser can rely on itself and give the necessary depth to this entity at its discretion. Artificial intelligence must be integrated for the latter application. This parameter will determine to what extent the user on the client side may experience the 3D effect .The hardware required to implement such ideas may require some thought process. This browser will give developers and website builders new functionality that can be modified at will to give their

content the exact level of 3D effect that is required to make their content more interactive and entertaining.

Analysis & Findings

1) In future IoT can be combined and largely benefited by the onset of 3D Internet. Avatars in 3D Internet would be more realistic and could be considered as the spitting image of the user himself so avatar can be used in field of medical i.e in medical colleges for cutting bodies during practicals or for practice of an Human body operation.

2) Using Depth perception with artificial intelligence a 3D web browser may in-cooperate an additional feature of storing estimated depth or elevation of a selected entity. These values will be entered by These inputs will be entered by the person accessing website or browser can be self-reliant and give evaluation which is needed and can help an avatar to sit in hotair ballon or helicopter and be able to view from top(top view of earth) Such a browser will give the developers and website creators a new functionality that can be adjusted as desired to give their content the exact level of 3D effect and depth as required to make their content more interactive and entertaining.

For example when we see the motion of a hotair balloon or helicopter on screen, the still image of this balloon or helicopter is on the basis of the x and y co-ordinates. Now the same motion of the same balloon or helicopter on a browser capable of perceiving depth it can estimate the z coordinate of the upward moving balloon or helicopter and display it appropriately. because of this viewing motion user can experience 3d effect on screen

3) Augmented reality system create a blended view for the user that is the combination of the real section see by the user and a virtual section generated by the computer that augments the scene with additional information this makes user to live record (hear)background noise and can be also used for business purposes where avatar in virtual world can be able to place advertisement billboards in virtual world and other avatar visiting the same world could be able to see the advertisement boards.

4)combining the property of Depth perception with artificial intelligence and augmented reality with 3D Internet we can make avatar to go underwater for a scoba diving and avatar can be able to enjoy live underwater life.

Methods of Implementation

Software Approach

1) WebGL

Realizing the dream of 3D graphics on the Internet can become a reality with WebGL which stands for Web Graphics Library . It is a JavaScript library for displaying interactive 2d and 3d content on the compatible web browser without any use of plugins. Derived from OpenGL ES (Embedded Systems) 2.0. WebGL is able to transform static visual variables of shape, size, texture, color, value, orientations, and overall display of information into a virtual 3D space that provides a rich 3D graphics experience on the browser .WebGL provides an exhilarating experience and serves as a great data visualization tool that can turn ordinary data into a compelling virtual story. The major browser vendors Apple (Safari), Google (Chrome), Mozilla (Firefox), and Opera (Opera) work on WebGL.

Hardware Approach

1)3D lens

The benefits of this idea would be similar to the benefits of a regular lens on 3D glass. This idea is theoretical and research is necessary in this field..

Fig.3:3D Lens
[Source:Google 3d lens]

2) Anaglyph Glasses

It consists of glasses of opposite colors (eg. Cyan and Red).When used as a pair of glasses they send two separate images to the viewer to create a stereoscopic image.

3) Polarized Glasses

By projecting two images simultaneously, one horizontally and other vertically polarized, one can produce 3D effects.

4) Shutter Glasses

Stereoscopic image can also be created by blocking the view of one eye at a time and repeating this at very fast rates.

Fig.4: Anaglyph-Shutter-Polarized-Glasses
[source : https://3dvision-blog.com/4124-anaglyph-shutter-polarized-glasses-or-autostereoscopic-3d-solution/]

Limitations

1)Internet Speed

Internet Speed is one among the main obstacles for the complete implementation of 3D internet. These are in terms of limitation of bandwidth. As 3D internet needs high end graphics and models, the necessity of high bandwidth is necessary. There are very less countries with high speed internet while others lack the necessary speed for 3D internet. Thus, even if some countries do have good speed, most of them cannot support 3D internet. due to that complete implementation of this technology is difficult

2)Hardware

The current internet which we use is 2d therefore it needs a traditional screen. once we move from 2d to 3D internet, we will also have to move from our traditional screens to ones that are compatible to render 3D graphics. we are going to conjointly need separate tools to look at these 3D pictures. furthermore rendering of such high end models needs high usage of RAM and central processing unit. therefore upgrading the current technology needs an overall upgrade of the present system around the world**.**

3)Cost

As we see in above 2 points, it is concluded that the price concerned within the overall implementation is high, which can discourage the invention and setup of 3d internet.

4)Attacks:

inflated hacking and malware attacks is seen.

5)Scams:

on-line scams may also increase

Future Scope

Virtual shopping

3D store can now be easily managed by the shop owner and represents an absolute innovation in the international web market. The system builds upon an earlier E-simple technology, Virtual mall, the first Virtual Mall in the world.

The virtual shopping scope is as follows :

1. Avatar navigation

2. Live interaction with other connected users

3. Product details and direct purchase from inside the 3D environment

4. An advanced editor lets shop owners place objects and furniture inside the 3D store

5. Access to statistics and visitor information

6. Personalized 3D shop assistants to assist clients and make the purchase process faster

7. Constant interaction with the database system and continuous refreshing of prices and object details.

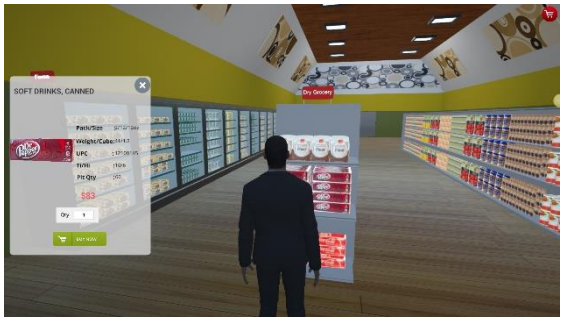

Fig.5:Virtual Shopping
[source:https://www.mercuryminds.com/visual-commerce/]

Education

3D internet can serve as a platform for education by several institutions, like school, colleges, universities, libraries and government entities. There are subjects like chemistry and

mathematics in which Instructors and researchers would favour 3D internet because it's more personal than traditional distance learning .

Fig.6: Virtual Education
[source: https: //www.techexplorist .com /future-internet-3d-internet/4309/]

Meetings

Big organizations can make use of the 3D internet to open virtual meeting places within given locations

Fig.7:Virtual Meetings
[source : https://su.org/blog/learning-in-spatial-3d-environments/ **]**

Embassies

We could create embassie in 3D internet,where guests will be able to speak face-to-face with a computer-generated ambassador regarding visas, trade and different problems

Fig.8:Virtual Embassies
[source : Google Embassies]

Live Sport Entertainment Many sports allow the users to watch or be part of several popular activities. Sporting leagues like Cricket, Football, professional wrestling, boxing, and car racing could be placed within the 3D internet for it users to play in the 3D environment

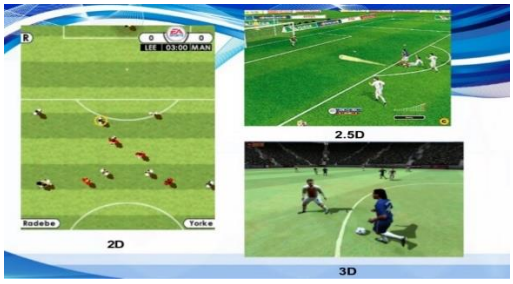

Fig.9:Virtual Live sport
[source : google 3D Live Sport Entertainment]

Arts

The modelling in 3D internet would allow the artists to make new kinds of art, that in many ways don't seem to be possible in world because of physical constraints or high associated prices. In 3D internet artists may show their works to an audience across the world. This has created an entire artistic culture on its own where several residents who purchase or build homes will buy design to put there. Gallery openings even permit art patrons to "meet" and socialize with the artist responsible for the design and has even led to several real life sales.

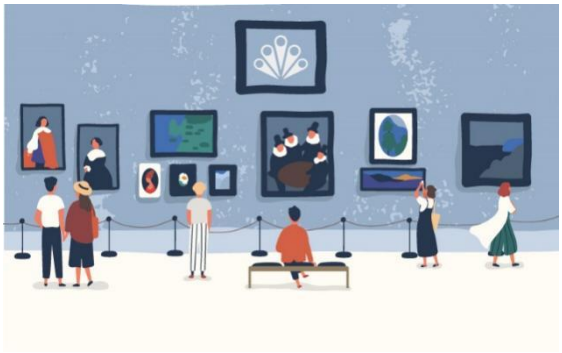

Fig.10:Virtual Exibution
[source : google 3D arts exibution]

CONCLUSION

In this paper we have discussed the general idea, history, future prospects, benefits, implementation methods and restrictions involved in revolutionizing the present quality of

Internet. We can see that the 3D internet is the future because it will definitely change the way we look at the internet today. The superiority and applications clearly surpass the cost equate with execution.. The need of a ubiquitous and intelligent Internet can surely be fulfilled by 3D Internet .Entrepreneurs and interested investors realize the true potential of the user-friendly, interactive, productive and addictive side of the market. But due to many barriers such as internet bandwidth, hardware, cost factors and lack of research, it is not easy to implement. At this point, the community has the potential to develop the digital world into a more diverse and interesting version but it needs a lot of research and financial assistance required to become a reality

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