Augmented Reality

M.Srivathsan [1], Samundar Ahmed [2], Dhanish Kumar [3], M.Karthikeyam [4], Narendran Muthuswamy [5]
[1 – 4] Student, Computer Science and Engineering, SRM Institute of Science and Technology, Ramapuram, Chennai, Tamil Nadu, India.
[5] Professor, Computer Science and Engineering, SRM Institute of Science and Technology, Ramapuram, Chennai, Tamil Nadu, India.

Abstract – Reality is the one thing everyone has to go through every single day of the life. Virtual way of living life is increasing throughout the world, particularly in large urban areas. It's very hectic and annoying on to have a real life example of things. Therefore the need arises for simulating real life things in the comfort of your seat to cope up with increasing demand. This paper explains the simulation of an augmented reality on a real life situation and present an adaptive optimization algorithm based on reinforcement learning. There are a lot of different idea for the optimization of systems. Many of them require a huge amount of manpower, monitoring and constant repetitive maintenance .The implementation of augmented reality, that allows to experiment with different infrastructures and to get real life reality like images in one place. This is a fully automated and real-time system that makes the system convenient, dynamic and efficient. Lesser the traffic.

Index Terms – virtual reality, augmented reality, surface technology, simulation.

1. INTRODUCTION

This is a guideline for preparation and basic overview of the project. What is augmented reality. It is a technology that superimposes a computer-generated image on a user's view of the real world, thus providing a composite view. The design created should be used to counter the problems posed by needing models for real life scenarios. The normal function of simulation requires more than slight control and coordination to ensure accurate description of the environment. A variety of different control systems are used to accomplish this, ranging from simple clockwork displays to sophisticated computerized models of humans and other living and moving things and coordination systems that self-adjust. This mostly involves using augmented reality systems that has the ability to modify its behavior according to the things around it. Augmented reality is a technology for connecting the real world and the virtual world, and it consists of the idea that the virtual world augments the real world. By realizing augmented reality, it becomes possible to display the virtual object, which a computer generates, on the scenery and objects in the red world, which are inputted from a camera. With this technology, it comes to be able to perform various things, such as a guidance,

A notes attachment to a building, the scene simulation in the outdoors, the interior design simulation in the indoor. In order *to* realize these, it is necessary to display a virtual object on an appropriate place. It comes back to the problem of registration that how to obtain the precise relationship between the camera and the objects in the real world. Most of the crossings handle the automated traffic signaling system using fixed duration interval between red yellow and green signals. The uniqueness of this model lies in its ability to handle real environment maneuvers with ability to modify its time and characteristics based on real time updates automatically. Thus transforming it into a dynamic controller. In current times almost everything is done from a place of comfort. May it be order in food or ordering clothes. But a major drawback is that nobody knows how the picture on display will look in front of your eyes. Virtual Reality (VR) is an important technology that can be harnessed in preparing various personnel in different areas for handling security threats and disaster situations. VR can be applied across diverse fields, ranging from military to medical applications, for a number of different purposes such as in training simulations or for modelling and visualization tools. It is well recognized that latency is a major shortcoming suffered by current virtual environment and tele-operation technology. In this paper, we stress the importance and extensive uses of various aspects of VR technology by presenting several virtual environment applications and discussing their benefits. We then present the ARP system and priority rendering technique, before discussing the advantages of implementing this system for a variety of applications. To implement an augmented reality system, we must resolve some problems. A geometric registration is especially the most important problem because the problem is a principal factor which provides a user with a sense of incongruity. The registration includes a problem of geometric alignment of the real and virtual coordinates and a problem of resolving occlusion between real and virtual objects. The former problem is considered as one of acquiring the position and orientation of the user's viewpoint in terms of registering the real and virtual worlds geometrically. The latter problem can be resolved by measuring the real world in advance when the real world is static. However, since the real world is usually dynamic, we must estimate a depth of the real scene in real-time. Latency is the time delay between a user's actions and when the virtual reality system responds to those actions. The 3-D trackers used in the former method can directly acquire 3-D position and orientation of receivers.

However, the drawbacks of the method are that the system requires a special equipment and its measurement range is limited to a relatively narrow area. On the other hand, the latter can estimate the position and orientation of the user's viewpoint from an acquired image and there is potentially no limitation in measurement range. When the relationship between a camera position and the user's viewpoint is known, the user's viewpoint can be obtained by calculating the camera parameters from captured images. This means that the traditional techniques studied in the field of computer vision can be used to measure the viewpoint. We focus on an augmented reality system that adopts the combination of vision sensor and video see-through system. Since the image captured by a camera is used both to estimate camera parameters and to show the user the real environment, The combination is able to synchronize the real and virtual environments and reduce alignment error between them. For implementation of an augmented reality system with highly realistic sensations, all the processes from acquisition of the user's viewpoint to displaying the composed image by using obtained viewpoint must be done in real time. Over the past four decades, simulation has proven to be a significant tool in the analysis of a wide variety of health care delivery systems. Over 30 years ago, Fetter and Thompson (1965) as well as Robinson, Wing, and Davis (1968), applied simulation to patient scheduling and other hospital operational problems. In the Medical Education area, the qualifying process for Life Support (LS) training is based on simulations of emergency situations. Current manikins have several resources incorporated to allow and facilitate for qualified training, such as pulse, arrhythmia and auscultation simulator. However, some deficiencies have been detected in the existing LS training structure. For example: Automatic feedback to the students as a consequence of their actions on the manikin, images such as facial expressions and body injuries, and their combination with sounds that represent the clinical state of the patient. Thereby making use of real environments and dynamic positioning.

2. LITERATURE SURVEY

Simulation is an ideal tool for addressing wide ranging issues in health care delivery. These issues involve public policy, patient treatment procedures, capital expenditure requirements, and provider operating policies.A model algorithm was developed by Yoshiyuki Mizuno' , Hirokazu Katd , Shogo Nishida, 2015 on Outdoor Augmented Reality for Direct Display of Hazard Information, algorithm on how to calculate threats and reality simulation of the threats has shed light on its use in security. This model can be used to reduce the risk generated due to congestion. This paper clarifies the information received by the source can be used to develop an entirely new self-made and efficient design to manage and automate reality.

Different views was studied by Charles R. Standridge Padnos School of Engineering on A TUTORIAL ON SIMULATION IN HEALTH CARE: APPLICATIONS AND ISSUES. His study revealed that, several characteristics of simulation make this technology uniquely applicable in the health care arena will be able to alleviate most major urban care in the near future i.e. for another 5 –15 years. Their paper stresses on a lot of issues and how to handle it. This paper also has a lot of public opinion listed in it. According to it the mass public really agrees with a reality simulated to show real problems than a real life model. Accident control route control and signal control is some of the topics discussed in it. Capacity allocation studies reveal that approaches like automatic data analysis and peak timing control can be of great use in enabling new automation of systems.

Augmented reality applications use computer-generated virtual scenes to enhance (or augment) the actual scene viewed by the user with additional information. In Hybrid Tracking for Outdoor Augmented Reality Applications by Miguel Ribo, Peter Lang, Harald Ganster, Markus Brandner, Christoph Stock, and Axel Pinz *Graz University of Technology, Austria this is ehat is shown*. The visualization subsystem uses a Dell Inspiron notebook (carried in a backpack) with a Geforce2Go graphics processor and Sony Glasstron high-resolution stereo HMDs with optical see-through capability (mounted to a helmet). This new startup can give newer development to portable augmented reality system. Using tools we can simulate some aspects such as facial expressions, skin color changes and scratches and skin injuries through image projection over the manikin body, and also play sounds like cries of pain or groans of an injured man. In Poster: ARLIST - an Augmented Reality

Environment for Life Support TrainingPoster: ARLIST - an Augmented Reality Environment for Life Support Training scholars, Fabrício Pretto FACIN-PUCRS, Isabel H. Manssour FACIN-PUCRS, Emerson R. da Silva HSL-PUCRS, Maria H. I. Lopes FAMED-PUCRS, Márcio S.Pinho1 FACIN-PUCRS, have described exactly the above said. Key points to learn from that Is very simple. Patient Simulation Control Tool (PSCT), in which the instructor is able to configure all the possible signs or feedbacks provided by the manikin and also to easily register all the trainee actions during the training session. Concerning this registration issue, actions like cardiac and pulmonary auscultation are automatically captured and saved by the PSCT. On the other hand, other registration aspects such as drugs administration, request for information and exams or cardiac massage or intubations can be easily registered on the PSCT's user interface with one or two mouse clicks. A question develops on how reliable and stable artificial reality is. Well it is a growing trend. Trends in Augmented Reality Tracking, Interaction and Display:

A Review of Ten Years of ISMAR discusses that. Written by Feng Zhou1, Henry Been-Lirn Duh2, Mark Billinghurst from Singapore it is a new age wide scope paper that proves that the augmented reality is the next step in artificial simulation. In detail it discusses During the evolution of AR, a variety of related research topics have been developed and discussed extensively. In our work, we grouped past AR research into the eleven categories shown in Table 1 below.

These categories are based on the key topics described in the previous section. This table shows the number of papers published in ISMAR, ISMR, ISAR and IWAR in each of these categories over time, and the final total percentage break down of the papers. also explored research trends over time. However, it appears that the proportions of calibration and application papers are decreasing over time, while the proportion of the interaction papers is increasing, perhaps reflecting the growing maturity of the field. There are also a number of areas (Visualization, Multimodal AR, and Authoring) in which there were no publications at the early conferences, but which have more recent research. Also discusses different types of techniques in this field. Sensor-based tracking techniques are based on sensors such as magnetic, acoustic, inertial, optical and/or mechanical sensors.

They all have their respective advantages and disadvantages. For example, magnetic sensors have a high update rate and are light, but they can be distorted by any nearby metallic substance that disturbs the magnetic field. Vision-based tracking systems are analogous to open loop systems whose output is perceived to have error.

Vision-based tracking techniques can use image processing methods to calculate the camera pose relative to real world objects and so are analogous to closed loop systems which correct errors dynamically. Lastly in A Learning Support Environment for Earthquake Disaster with A Simulation of Furniture Fallingby Mobile AR by Naosuke Yamashita, Hirokazu Taki and Masato Soga all from Wakayama University

Wakayama, Japan have used the AR to show how it helps in safety methods. By simulating what can happen in an earthquake they are keeping real life damage in control. The experiment objective is to verify the usefulness of the learning support environment for earthquake disaster.

3. SYSTEM ARCHITECTURE

Following are the modules for the Augmented Reality

Base Creation Module

In this module we have to create an account in Vuforia Software. A base is decided and uploaded in the Vuforia account. Later this base is downloaded from the software and used in the unity software during object creation.

Object Creation Module

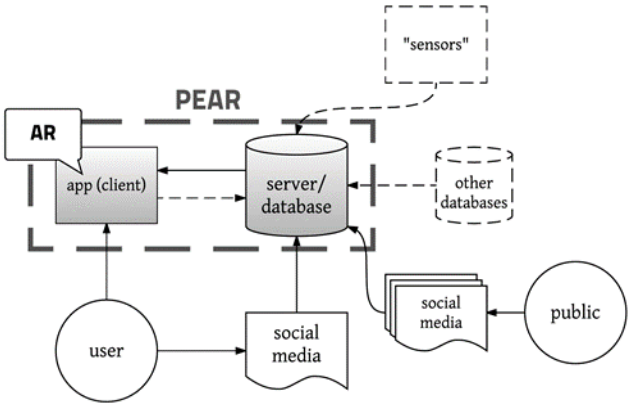
Here an Augmented Object is created. A software called unity is used for this object creation. A number of Objects can be uploaded or selected from the software.

Simulation Module

In this module the object created is made to move. This is made to move. This is possible by using Coding. C# is the Language which is used for the Coding Purpose. The Object moves in the base which was created earlier.

Display Module

In this module the augmented Reality object is displayed moving. The base object is showed to the Device Camera where the Augmented Object is visible moving.



4. METHODOLOGY

The heart of the system in this case is the platform which would go on to give it a base. Vuforia is the key. The software that helps create a base and keep a real object working as its base. This also involves complex electronics and software interaction. Then comes the second leg of the system. The augmented object. Now this could be anything that the user wants it to be. The whole point of this system is to make anything show up on how it would look on the platform. This is done with the help of a software called unity. Then the simulation comes into play. It is the combination of both th above processes and its amalgamated result. The simulation is done using the convectional C#. this is pure codng knowledge. The optimized code will reveal better interaction. Finally comes the display. This is where the camera device interacts with all the above created modules to enhance and show the entire augmented simulation in one go

5. CONCLUSION

This model automates the process of trial error and helps to leave no room for the error. Basically it is a sure shot trial method. Its smoth ability to bring real world into a virtually

designed environment that is almost as accurate as the real thing is wonderful. This will help in so many fields such as fashion design, interior design, market trials, real world application of proto types, security and safety, and much more. It will give scope for accuracy and precisely give results.

6. FUTURE ENHANCEMENT

The whole world is moving into virtualization. Everything that technology is aiming is to make things easy accessible and in front of them without having to lay off their comfort, thus giving augmented reality the ability to be the next step. The next step to realism, virtual realism.

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