Virtual reality and its challenges in Albania

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Abstract
Online communities as blogs and chat rooms which are text based as so out of line those days when virtually has taken place. Mentioning virtual worlds all would think of dreams and freedom in acting, it is quite so with the huge difference of computer based simulation that allows artificial stimuli, creation and editing of our personal representative avatar. The upgrading of virtually in 3D presentations rather than graphical modest interface has brought it to our attention. Further more because in Albania only few know the benefits and controversies of applying simulation thus even fewer apply it really in business or education. Trying to enlighten the theoretical points of view in relation to this non real reality and *understanding its advantages and disadvantages are this paper's first aims. Questions like: Is* it worth minimizing human contact and make a great emotionally incentives presentation? The challenge of what those new concepts mean i*n Albania's context and how are they* applied if so, is foundamental for this paper. What do we need to embrace this brand new technology and what deviances rely towards us that limit our opportunities of approaching. Are we ready to have a slice of our life in a virtual reality and cope with it? Could our educational framework use virtual classrooms? Would we eventually be able to interact in the world we created? Those and others will be discussed in the paper to be presented.

Keywords: virtual reality, avatar, online community, computer-based simulation environment, contribution barriers, social impact.

1. Introduction

Initially what drew us to the term of virtual reality was the pleasant intrigue that characterizes every reality however real he might be. Studying virtual reality means to explore a parallel world where you are and still are not present, means to create a tent space and time which you can manipulate as you wish. Since the early stages of the development of this technology it was clear that the concept was very interesting and was promising evolution not only in the world of software and hardware engineering, but it would further make the change in the way of thinking and conceiving the world that surrounds us. For these reasons we decided to write down this paper, in order to enlighten some of the issues about virtual reality. In the first part of the topic will explain some theoretical views on virtual reality, which are its forms and what additional equipment is needed to make possible not only its construction but also its presentation before the mass or stand – alone users, advantages and disadvantages of its application in principle and the concept of avatar, our person during immersion. Then we

thought to enlighten the fact about how this technology is integrated in the Albanian environment, particularly in the field of education, what are the reasons that led to this level of distribution and what are the challenges in this environment. The method we used for this, was to gather feedback directly from the young students that have gone forth through the stages of the education system in Albania, the study of the educational framework and the space that it creates or limits in this direction, finally an illustration of such application extremely modest at a particular school in the district of Fier, Albania. In seeking to analyze the issues raised in the abstract we pose the following paper.

2. What is Virtual reality?

"As time goes on, so the technology will progress, and move further away from its original aims, rather like gunpowder. Virtual reality started in the abstract, and then moved on to war; perhaps ultimately it will bring peace[1]*."*

Virtual reality attempts to create an environment that sorrounds the users so that he or she becomes part of an experience. It is a term that applies to computer-simulated environments that can simulate physical presence in places in the real world, as well as in imaginary worlds. Most current virtual reality environments are primarily visual experiences, displayed either on a computer screen or through special stereoscopic displays, but some simulations include additional sensory information, such as sound through speakers or headphones. Some advanced systems now include tactile information, generally known as force feedback, in medical and gaming applications. Furthermore, virtual reality covers remote communication environments which provide virtual presence of users with the concepts of telepresence and telexistence. or a virtual artifact either through the use of standard input devices. In practice, it is currently very difficult create a high-fidelity virtual reality experience, due largely to technical limitations on processing power, image resolution, and communication bandwidth; however, the technology's proponents hope that such limitations will be overcome as processor, imaging, and data communication technologies become more powerful and cost-effective over time. In the book " The Metaphysics of Virtual Reality" by Michael R. Heim, seven different concepts of virtual reality are identified: simulation, interaction, artificiality, immersion, telepresence, full-body immersion, and network communication. People often identify VR with head mounted displays and data suits.

Actually there are numerous kind of virtual reality but most can be classified into one of the following three categories: Desktop VR, Video Mapping VR, and Immersive VR.

Desktop VR is when a computer user views a virtual environment through one or more computer screens. A user can then interact with that environment, but is not immersed in it. Desktop-based virtual reality involves displaying a 3-dimensional virtual world on a regular desktop display without use of any specialized movement-tracking equipment. Many modern computer games can be used as an example, using various triggers, responsive characters, and other such interactive devices to make the user feel as though they are in a virtual world. A common criticism of this form of immersion is that there is no sense of peripheral vision, limiting the user's ability to know what is happening around them.

[1] Sherman and Judkins, 1992

Video Mapping VR uses cameras to project an image of the user into the computer program, thus creating a 2D computer character. Although fully immersed in the environment, it is difficult to interact with the user's surroundings.

Immersive VR uses a HMD to project video directly in front of the user's eyes, plays audio directly into the user's ears, and can track the whereabouts of the user's head. Then a dataglove (or datasuit) is used to track movements of the user's body and then duplicate them in the virtual environment. When the user cannot distinguish between what is real and what is not, then immersive VR has succeeded.

3. Advantages and disadvantages of virtual reality

In the future virtual reality may be so real that it will be indistinguishable from actual real-life. In fact as you are immersed in the virtual reality dream, your mind will be tricked into believing that you are actually in the real world scenario and that you really live in the time period and setting that the virtual reality dream has set up.

3.1 Advantages

• Virtual Reality is more personal than electronic mail, instant messaging, letters or telephone calls.

• Users immersed in the model or data, easy to "look around" more natural, more fluid, turning head easier than mousing, multi-modal systems: speech and gesture recognition.

• Virtual Reality is a great social leveler, it may find a common ground across differences in age, culture, and linguistic orientation

• People will be drawn together by similar interests instead of purely by geographic location

• Communication will be both challenging and rewarding, more effective and productive, and more enjoyable

• A tremendous opportunity for every 'connected' person to find his or her field or discipline

• After using a medium that provides total freedom of expression face-to-face communication may be found to be too confining.

3.2 Disadvantages

•An inescapable aspect of social life is the formation and maintenance of interpersonal relationships

• Interaction ought not be substituted for community

• Separates the 'haves' from the 'have-nots', a technology of Information Age Industrialized nations

• Virtual Reality will provide a communication environment in which the dangers of deception and the benefits of creativity are amplified beyond the levels that humans currently experience in their interpersonal interactions.

•It could lead to low self-esteem, feelings of worthlessness and insignificance, even self-destructive acts

4. Examples of additional hardware

- **The AddVisor 150**

The AddVisor 150 personal display system is designed for the high-end professional market for Head-Mounted Displays with AR and VR capability. The AddVisor 150 is a transparent high-resolution Head-Mounted Display. The image is generated on two independent full colour 1280x1024 pixels (SXGA) Liquid Crystal on Silicon microdisplays. A light weight solution for the most demanding of applications the AddVisor 150 is recognized for excellent image quality, high brightness and contrast. The AddVisor 150 is ideal for direct view mono- and stereo (3D) viewing.

The image can be shown superimposed on the environment with up to 35 % see-through or fully immersed. The AddVisor 150 is designed for a 46 degree diagonal 100% overlap field of view. A 50% overlap can also be used, giving a 54 degree horizontal or 60 degree diagonal field of view. It features a patented optical design that combines a wide field of view with high transparency see-through. Using a patent pending head fitting system with easy adjustments, low weight and eyeglass compatibility, the AddVisor 150 provides hours of easy and comfortable viewing.

- **Eyetop Centra**

Eyetop Centra is the first wearable video screen with stereo sound, making it possible to enjoy multimedia content wherever you are. Just plug it into your mobile video device, put your glasses on, store your video device for hands-free operation, and benefit from having a TV set right in front of your eyes!

Best of all, Eyetop Centra lets you stay in touch with your surroundings. You can watch the video action on the built-in screen while you monitor the live action through your fashion Eyetop sunglasses. Feel free to move!

- **VirtuSphere**

The VirtuSphere looks like the Ball of Death from The Simpsons Movie, and it allows a player to move somewhat freely in any direction for the game that they want to play. It takes a team to get a player in this giant, metal, stationary hamster ball. It looks just plain unsteady. It would cost about $55,000.00, and you would need a lot of space to make it work. Not to mention a team to lock you in.

- **CyberGlove II**

The new wireless CyberGlove II system is a fully instrumented glove that provides up to 22 high-accuracy joint-angle measurements. It uses proprietary resistive bend-sensing technology to accurately transform hand and finger motions into real-time digital joint-angle data.

The 18-sensor model features two bend sensors on each finger, four abduction sensors, plus sensors measuring thumb crossover, palm arch, wrist flexion, and wrist abduction.

The 22-sensor model has three flexion sensors per finger, four abduction sensors, a palm-arch sensor, and sensors to measure flexion and abduction. Each sensor is extremely thin and flexible being virtually undetectable in the lightweight elastic glove.

The CyberGlove system has been used in a wide variety of real-world applications including:

- virtual reality biomechanicsan
- animation
- digital prototype evaluation

The CyberGlove II Wireless Glove transforms hand and finger motion into real-time digital joint-angle data—and works without cumbersome wires that can impede movement and slow your project. For animated movies, video games, and cartoons, artists and designers can quickly create realistic finger and hand movement in Alias' MotionBuilder software. Because the glove is wireless, productions using multiple actors can enjoy reduced time and costs by avoiding separate body and hand motion-capture setups.

Designed for Comfort and Functionality:

The CyberGlove II data glove is constructed with stretch fabric for comfort and a mesh palm for ventilation. The 18-sensor CyberGlove II system includes open fingertips, which allow the user to easily type, write, and grasp objects.

- **Kinect for Xbox 360**

Kinect for Xbox 360, or simply Kinect (originally known by the code name Project Natal) is a "controller-free gaming and entertainment experience" by Microsoft for the Xbox 360 video game platform. Based around a webcam-style add-on peripheral for the Xbox 360 console, it enables users to control and interact with the Xbox 360 without the need to touch a game controller, through a natural user interface using gestures and spoken commands. The project is aimed at broadening the Xbox 360's audience beyond its typical gamer base. Kinect competes with the Wii Remote Plus and PlayStation Move and PlayStation Eye motion control systems for the Wii and PlayStation 3 home consoles, respectively.

*Innovation and curiosities

The first virtual reality technology to let you see, hear, smell, taste and touch.

What was it really like to live in Ancient Egypt? What did the streets there actually look, sound and smell like? For decades, Virtual Reality has held out the hope that, one day, we might be able visit all kinds of places and periods as 'virtual' tourists. To date, though, Virtual Reality devices have not been able to stimulate simultaneously all five senses with a high degree of realism. But with funding from the Engineering and Physical Sciences Research Council (EPSRC), scientists from the Universities of York and Warwick believe they have been able to pinpoint the necessary expertise to make this possible, in a project called 'Towards Real Virtuality'.

'Real Virtuality' is a term coined by the project team to highlight their aim of providing a 'real' experience in which all senses are stimulated in such a way that the user has a fully immersive perceptual experience, during which s/he cannot tell whether or not it is real. Teams at York and Warwick now aim to link up with experts at the Universities of Bangor, Bradford and Brighton to develop the 'Virtual Cocoon' - a new Real Virtuality device that can stimulate all five senses much more realistically than any other current or prospective device. For the user the 'Virtual Cocoon' will consist of a headset incorporating specially developed electronics

and computing capabilities. It could help unlock the full potential benefits of Real Virtuality in fields such as education, business and environmental protection..
Professor David Howard of the University of York, lead scientist on the initiative, says: "Virtual Reality projects have typically only focused on one or two of the five senses - usually sight and hearing. We're not aware of any other research group anywhere else in the world doing what we plan to do. "Smell will be generated electronically via a new technique being pioneered by Alan Chalmers and his team at Warwick which will deliver a pre-determined smell recipe on-demand. Taste and smell are closely linked but we intend to provide a texture sensation relating to something being in the mouth. Tactile devices will provide touch." A key objective will be to optimise the way all five senses interact, as in real life. The team also aim to make the Virtual Cocoon much lighter, more comfortable and less expensive than existing devices, as a result of the improved computing and electronics they develop.

Digital Contacts Will Keep an Eye on Your Vital Signs
Wiimote, and an iPhone app made for diabetes patients to track their glucose levels. A contact lens with augmented-reality powers would take personal health monitoring several steps further, because the surface of the eye can be used to measure much of the data you would read from your blood tests, including cholesterol, sodium, potassium and glucose levels.

5. How to create your avatar?

Users are able to customize body shape, gender, facial features, hair style, and clothing. They can then display a 2D head shot of their Avatar on their Gamercard (although they are still free to use their previous picture should they so choose). Microsoft has indicated that earning Achievements in future Xbox 360 games can reward players with new clothing for their Avatar. An example of which is Left 4 Dead 2, allowing people to earn T-shirts and a First Aid Kit trophy that is held by the Avatar. Xbox Live GM Ben Kilgore stated in 2008 that the avatars will only be available for games that have a E10+ rating or lower only (featuring content that is considered suitable for children under 10 years of age). This may change sometime in the future, though presumably in Microsoft's own games if it ever happens, to monitor their usage in mature games Users can edit their avatar online on Xbox.com with full control of the avatar. This allows Live users without access to the physical Xbox 360 console (i.e. Games for Windows – Live or Windows Phone 7 users) to edit their avatar. Users can edit every feature that they can from a real Xbox 360, and even equip awards that they have earned. The editor is Microsoft Silverlight based.

6. Case of Albania

6.1 The impact of virtual reality in Albania

To answer some questions raised about the topic, we decided to get an impact from the students at the University of Tirana in a written questionnaire conducted with about 100 of them aged about 22 years old. It should be emphasized that the questionnaire itself was not intended to serve as scientific evidence, but to test whether our assumptions about how knowledge of this update age group on technology, were based or not. Initially they were asked about basic knowledge in virtual reality and what they knew about this concept; the answers showed that the majority of them were clear about what virtual reality meant, they

defined it as an artificial environment based on computer, generated by software that required additional hardware too. Anyway we continued furthermore, making a somewhat provocative question to see if this issue was completely clear or not and if they confuse or equate the concept of virtual reality with simulation, we actually expected it: most of the them knew that essentially their is difference between terms, but were not able to determine what the difference is. By following questions showed that their scarce knowledge results from the less recognition or experience that they have with this technology, they were faced with only a few manifestations of virtual reality entertainment in the form of XBox games, film tracking 3D (which was only made possible in Albania in late 2010), experiences with software like SecondLife and superficial knowledge of the concept of avatar as well as branch architecture students claimed they have a specific subject using software to create 3D images like the 3D Studio Max software, but in any case, none of them had encountered or heard of this reality applications for training purposes, simulation, or illustrative in the context of learning. Further, to understand if this approach that appears in the future could limit human contact is worth to be applied and if we think it is worth and what do we gain as human beings, students were asked about their feelings experiencing forms of virtual reality that they themselves mentioned above. In general, almost all said they had felt enthusiastic, positive emotions and the desire to repeat the experience. Very few of them expressed that they felt fear and limitation during immersion and could not react and interact just as they wanted to because we may be represented by the best avatar, but we can not fully identify with them. Not without purpose we chose to fill our questionnaire by students, just to get their feedback on virtual reality in Albania, about 3 / 4 of them said that virtual reality applications in the field of education in our country has no application and the remaining students so naively or misinformed stated that such applications referred to the use of display, projector and PowerPoint presentations. This led us to the conclusion that their knowledge on these concepts has flaws and this is probably exactly the essence of the problem. They certainly were enthusiastic and willing to embrace this technology because according to them its application in education will bring increased attention and interest of the class, the best approach to the concepts offered during it and interaction. It was also noticed that they had no fear of complications or reality getaway. To take an unequivocal assessment of students on the opinion that they have regarding the extent to which virtual reality is being applied in Albania they were told to choose a level of 1 – 10 in ascending order. This quantitative indicator resulted in an average of three, extremely low, for reasons that students their selves commented such as: lack of financing and training of the teaching staff in particular, by submitting as a challenge for authorities in the future to undertake investments in this promising field of future technology. From the feedback received we came to the conclusion that the level of virtual reality applications in Albania is relatively low, this is because in fact such concepts are not yet fully clear, and because there has not been given chance to people to try those technologies, although as noticed they have a great desire to get information and to learn. Regarding the education field, the situation is not quite optimistic, but not to hasty conclusions and in order to study the causes of this lack we decided to examine the legal framework of education and especially the guidelines and directives of the Ministry of Education related to the teaching process in this direction.

6.2 Legal framework of guidelines for education in Albania[2]

To better understand the space that our country offers for the implementation of virtual reality as an alternative method of learning, the further application of virtual classes or presentations we had to review a document issued by the Institute of Education Development of the Republic of Albania, entitled "Basic general standards for teachers", directed to all educational institutions and approved by the Minister of Education and Science Mr. Myqerem Tafaj, in March 2011. The development of these professional standards for teachers aims to professionalize teaching and treats the educational profession as any other profession that needs to be standardized by making simple measurement of performance and the improvement process of teaching. Guidelines provided by this Directive define standards that make up the entirety of the basic professional skills that every teacher employed in public or private educational institutions must fulfill during his/her entire career. Below are cited the main standards concerning the guidelines on professionalism that teachers should have in this respect and conduct at the instruction:

- Standard 2: Updating; Teacher has the power to upgrade his knowledge and use appropriate methods in his work;
- Standard 4: Develop individual professional; The teacher has the power to assess its performance, is committed to improving the working methodologies of teaching - educational, through appropriate professional development and should be shown a willingness to adapt to practical and useful progressive ideas;
- Standard 5: Curricula; Teacher should use various presentations and explanations of concepts that provide the basic ideas and makes connection with students prior knowledge;
- Standard 6: Achievements of pupils and their diversity; Teacher recognizes and takes into account changes in his work and ways of learning of students. He creates different students opportunities and conditions for progress. It should identify differences in ways of learning and achievement, including different styles of learning and multiple intelligence, must assess human diversity;
- Standard 9: Teaching: The teacher must develop alternative teaching through

well - organized lessons for each sequence, using appropriate strategies, methods development, learning technologies and combining individual work with teamwork. He/She must use a number of strategies and appropriate exercises, including learning through the computer and the Internet, promoting equality and inclusion of students. Develop concepts and methods that make students able to apply new knowledge, reasoning and skills acquired. To effectively use audiovisual equipment and techniques, concretization, workshops etc.; To meet the learning goals and objectives;

- Standard 11: Reflection on teaching and learning; The teacher should constantly review the effectiveness of teaching and its impact on student performance; and
- Standard 12: The learning environment in class; Teacher must work to enrich the classroom environment and audiovisual teaching equipment.

The feedback received from this document is very general because as seen in standards 2, 4 and 5 teachers are instructed to use alternative methods and be updated with them throughout

[2] according to the Basic General for Teachers, item 4, Tirana: Institute of Education Development, 2010. Revised March 2011

their entire career and to support such progressive ideas that are helpful for the effectiveness of student learning. While standards 6, 9 and 12 are concrete in their definitions as they cite the fact that professionalism should suit the needs and profile of each student, teachers should try to find the best form of approach, for example, use audiovisual equipment and techniques, etc., concretization; and even work to enrich the learning environment with them. What flares in this document is the fact that it says all and it says nothing, in theory the above standards do not preclude the use of any form of virtual reality, if you would call it naively as an "alternative method" in teaching. But still nowhere is mentioned virtual reality or any other term associated with it, besides using any simple hardware device as a monitor or use the Internet as a source of updated information. So as seen, foundations laid in this direction are very weak and evasive, leaving room for misunderstanding or even worse for misinterpretation. Everything is left open in this document that instinctively seems to accept and not accept anything. However, again according to these standards developed by the Institute of Education Development, established and approved by the Minister of Education the state practically instructs teachers to try to adapt and enrich the learning environment, but at the same time does not provide them any concrete tools to do so!! Therefore, we conclude that the resolution of the issue should start right here and be followed later by training and dissemination in the mass educational institutions in the country as "another" form of teaching or illustration and as a genuine process that's worth to be applied[3].

6.3 Multimedia interactive tables.

Educators are passionate about imparting knowledge to their students, always excited to try new ways to keep their students engaged, especially in such a high-tech, engaging society . Presentation is a device that interacts with a computer and a digital projector, where the computer images appear in the table, from which can be viewed and manipulated computer data. This technology has been applied in a primary school in Fier, "Flatrat e dijes".

Fig.1[4]

What has MIT offered?

• Variety of learning (from touching, watching , listening, etc.)

• Ensure the mainstreaming of students.

• All in service to one another (students can work together in the table, some other computer control, others discuss about the activity performed, etc.).

• Serving teachers, "mind tools" that inspire them and encourage critical thinking to students.

[3] The translation is made by the authors

[4] Pictures made by the authors

• Interaction (which occurs between teachers and students in the computer table)
• It is a magnet (very attractive), the power for children.
• Variety of actions in the table.
• Use of Color (We know that students respond strongly when using colors.)

7. Conclusions

Trying to study abstraction is obviously difficult, but the context in Albania makes it even more difficult. During the paper we tried to analyze the key points of virtual reality, stopping first in the theoretical terms and the benefits or weaknesses of the application of this technology. The development of relevant software and hardware is an indisputable advantage for the spread of this technology and the increasing number of products offered leads later to the growing competition and high quality as well. We focused especially in our country because virtual reality is an interesting innovation that creates new challenges that were not previously encountered. Noted that the interest was quite large, as well as the desire to embrace this technology with the conviction that it will produce only advantages. We found that the educational aspect of virtual reality in Albania lacks theoretical and practical tools needed to use its applications and simultaneously leaves all the theoretical roads open. All leave to remain for the time which will show whether these challenges will be overcomed.

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