Humanity vs Virtual Reality/Augmented Reality

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ABSTRACT

The use of technologies which provide an extraordinary experience is becoming more and more popular in today's World, such technologies can extremely impact a person, allowing for many plausible experiences. Technologies such as Virtual Reality and Augmented Reality can simplify lives, making them easier and more enjoyable. There is a huge potential for such innovations, why are we not using it fully then? Human Computer Interaction issues arise with this development. Will we become "cyborgs" wearing gear at all times, walking in our "cyberspace", "living the dream" life in a digital world. How can this be changed, can this notion become more natural for humanity. Technologies already own our identities, face recognition, fingerprints, will we survive or will we be emerged in the perfect artificial world?

1. Introduction

Virtual Reality (VR) and Augmented Reality (AR) technologies evolve rapidly and develop to suit many fields, including medicine, education, design, training, and entertainment. However, in reality a large amount of systematic research is required before these technologies reach its full potential [Kalawsky, 1993 (1)]. In order for VR/AR systems to be effective and accepted by their users, researchers need to focus mainly on addressing a number of human factors [Thomas, J.C. and Stuart, 1992 (2)]. VR and AR enhance our perception of Human Computer Interaction (HCI) allowing for Mixed Reality(MR). MR defines an environment in which both virtual world and virtual world objects are presented together within a single display [Milgram, 1994 (9)]. While HCI is concerned with interactions between people and technology. This paper will talk about the technology today, advantages and disadvantages, the idea of technology addiction and notion of Cyber world will be discussed in Section 2. Section 3 will describe the impacts of VR/AR technology on a user. How can this advanced technology impact our day-to-day lives including health and safety issues which are very important for many users. Today, the idea of "Living the Dream" is becoming more and more realistic due to technology advances (Moore's Law), this will be described in Section 4. Finally, Section 5 will conclude this paper.

2. Technology Today

Technology today is extremely advanced, computer speed and functionality, image processing, synthetic sound, and tracking mechanisms are joined to prove a realistic mixed-reality world [Kay Stanney, 1995 (3)]. 10 years ago the computational power for a user to be immersed in a mixed-reality world would require the user to have a backpack with full-on gear such

(Figure 1)

as GPS trackers, graphics engine, display monitor. That gear would weigh around 20 kg (Figure 1)[Piekarski, 2002 (14)]. However, today all of this required technology is packed in a simple smartphone, all we need to add is means for display, this is where the VR headsets are used.

2.1 The Good and the Bad

There are many advantages of using technology. It allows for a simpler world in which people can help each other, learn from each other, learn from technology and basically do everything online. Teaching, shopping, research, entertainment can be all done online. Technology has a huge impact on our lives, we use it everyday because its simple and fast. Almost everything contains a piece of information technology, everything is becoming "smart", smart cars, smart houses, smart watches. This is just such a huge advantage for humans. Of course everything comes with a price and the division between people will be evident in the near future as the latest technology is always expensive.

Human Computer Interaction can be a problem for elderly user, who never used a device such as a computer, especially in rural areas. The world took a huge turn for them and they have to adjust, using technology for payment, documentation, etc. Technology is definitely reducing Human to Human Interaction as research says that about 85% of smartphone user will check their phone even if they are in the middle of a conversation. Opinions in the virtual world become very important, leading to false identities and "fake" people.

Many of our identities are becoming electronic based, bank accounts, passports, electronic documents, this is a huge simplifications for many matters. However, if that data is leaked, our entire lives and privacy can be sabotaged, therefore security is extremely important. Some applications already interact with users by scanning their unique identification parts such as fingerprints, retina scanners making the global internet the most powerful information source in the world.

2.2 Technology Addiction

Addiction to technology can affect various aspects of a person's life and may even

require treatment [Young, 2007 (5)]. Technology addiction can truly change the user's social life, his/hers emotional state, interfere with daily life, impact school, family, friends, work and even everybody in the social cycle [Ferraro, 2007 (6); Morahan-Martin and Schumacher 2000 (7)]. This can be very negative in some extreme cases, leading to leaving normal life and living the Cyber life.

Although technology addiction is not yet defined in the medical field, a number of the symptoms are known: conflict, salience, stress, depression, mood modifications, tolerance, sleep deprivation. Addicted users can forget about time, about life and pursue their career online. They become glued to their small displays as seen in the video (8). All the user are blinded by their smartphones, the world seems dark and ugly, however everything online seems to be colorful and pretty. There is no human interaction, attention is impossible to achieve, yet only to record terrific events. Statistics have shown that a smartphone is checked 47 times a day on average by a user.

This is only using a smartphone, which is only capable of giving us so much, the world of Virtual Reality and Augmented Reality has a bigger potential. Therefore there is a higher chance of leading the world to this addictive terrible state, promising a better world online.

Social companies came up with strategies to addict users, the research is clearly going in the wrong direction. The idea of "Rewards and Punishments" in a social media is just a perfect addiction scheme. Once opening a social media, some new content is expected, however if after a refresh the content is not the desired content, the dissatisfaction grows, the need for more and more builds inside. Social media introduced an idea of virtual fame, idea of likes and popularity can surely lead to addiction [Jaron Lanier (11)]. Large companies can easily manipulate users this way, providing "Rewards and Punishments" depending on the quality and benefit of the user. Mixed Reality technology can allow for a more advanced control of the population by the bigger companies. Leading to multiple areas of psychological concern.

2.3 "Cyberspace and Cyborgs"

Today, a Cyborg is still mostly a fictional character, but what will happen in a few decades? People slowly start wearing technology on them. There are multiple ideas of chip implants allowing for extra abilities. Robotic parts can be attached and wired to the body and react to the user's subconscious intentions. This leads to the idea of Cyborgs becoming more and more possible. The VR/AR technology is also a contributing towards this idea. One day it might be implanted into our eyes enabling us to see "more" of the world.

Computer games such as Detroit: Become Human forward the idea of androids in the real world, integrating and living with humans. The interactions between people and androids are quite harsh. However, these robots work exceptionally better than humans, their ability to analyze information and process data evaluating situations brings them to the top shelf of assets [Detroit, (12)]. Human interactions will be difficult, leaving an important task in the hands of an android.

Sophia is the latest and most advanced robot to date by Hanson Robotics. [Hanson Robotics, (13)]. This innovation shows the abilities of the technology today. It is claimed that Sophia can think in some manner, she is becoming a genius machine. In the near future a genius robot could be a teacher, a worker, a player, changing our entire lifestyle. Will the world accept robots? Is there a chance for

an error, a mutiny, or a conflict? Where will the control be?

AR/VR technologies inspired the idea of "living" in Cyberspace, a Virtual Environment, suggesting a constant interaction with computers. HCI can change from temporal and physical to permanent and cognitive. Interactions between Humans and Computers or
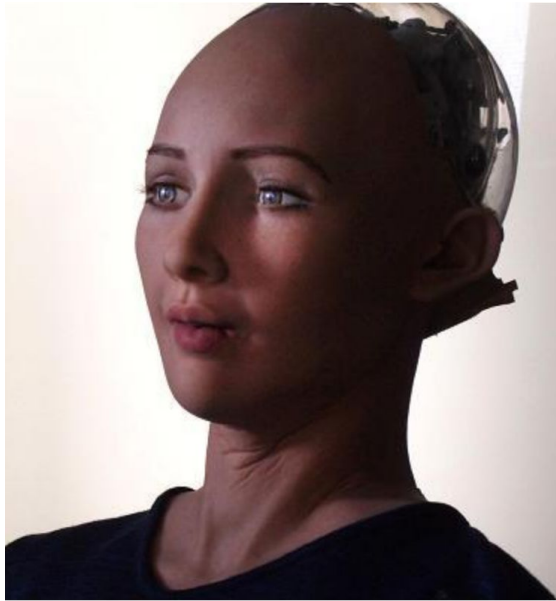
(Figure 2.)

Machines are changing slowly as they begin to be a part of our world. Some are serving in bars, some are working in hotels, restaurants. We are already interviewing robots such as Sophia (Figure 2.)[Hanson Robotics, (13)]. The technology is advancing and we are inviting the cyberspace into our real world.

3. Impact of VR/AR Technology

AR and VR technologies introduce new opportunities for business and personal users, transforming current methodologies. The possibilities are infinite with intuitive interaction where gestures, mood, and gaze

are the controls. Devices will respond to ambient cues and intentional movements to create personalized and empathetic experiences. This interaction will be extremely hard to implement, requiring many trackers and devices such as smart gloves, displays to overlay information, etc. The new era of HCI is promising, however the history will repeat itself just like with the ancestors of AR/VR such as television, computers, and every person will have to start from the beginning and learn how to use this new technology. The current technology somewhat provides an introduction to the upcoming innovations in AR and VR utilization where gestures are recognized by smartphones and smart TVs. The huge advantages of visualization, description and many other areas will essentially be used by every business, affecting individuals in the workspace.

Will everything be perfect? What if there are errors in the system, what if the implementation is hard to understand, will users get frustrated? Human error occurs easily as people make mistakes based on their intuition.

There are many health and safety issues associated with VR/AR. As described above addiction is a main problem, some families already introduce days without electronic devices. Research shows that about half of smartphone users tried to limit their usage and only 30% admitted to be successful.

The biggest impact will probably be the social impact, just like the ancestors of AR/VR it has a potential for negative social implications through misuse and abuse. It might even pose a greater threat due to the higher level of user interaction [Kay Stanney, 1995 (3)].

Being emerged in the Virtual World can also be dangerous, interacting with the entire body requires a safe room or area. Imagine being present in a virtual word and walking into a wall, or falling from a

ledge. Augmented Reality presents a better solution where the real world is still present. However, some virtual objects can still trick natural intuitions.

All of the almost realistic experiences can also reflect on the real world, extra interactions and capabilities may lead to violence. People may turn their backs on the real world and become "contented zombies" wandering around synthetic worlds [Kay Stanney, 1995 (3)]. Interaction of the user with the Virtual World in not quite yet natural and may result in cybersickness. Cybersickness is a form of motion sickness that occurs as a result of exposure to Virtual Environments ranging from headaches to severe nausea, influencing the future advancement of AR/VR technology.

Human Computer Interaction can reach a state where a person is locked in their room, waking up everyday and just entering the Virtual World, receiving some food, and living constantly in the Virtual World. Work, teaching, social interaction can all potentially be done in that Cyberspace, and there will be no need for the Real World. Transportation and tourism could completely diminish as all of there interaction will be simpler and faster in the Virtual World, leading to constant Human Virtual Interaction.

4. "Living the Dream"

Due to the highly advanced technology and the unlimited possibilities, the notion of "living the dream" can be formed. AR/VR enables the modification and personalization of individual experiences. The world can become a large Minecraft game. Every user can see and feel the world just how they like it, making the perfect dream come true. The world without limitations and abilities of a super human can truly make the real world fade into oblivion. The idea that everything is possible is incomprehensible currently, but this idea is becoming more and more realistic with technology innovations. Mixed Reality World also sounds like a dream. What if the current world is overlaid with millions of computer graphics everywhere, making it pretty and full of life. Will humans interact more with the artificial intelligence in the future, will carbon life form be copied into the Mixed Reality World, will we live eternally in the digital dimension? There is one huge constraint, what happens when the battery dies?

The promising desired life can be very tempting for many offering unrealistic, impossible experiences. Interaction between a person and the computer would completely change as the person would become immersed in the Virtual World. Everything could potentially become automatized and cognitive. The brain and thoughts would become the main controller in that world.

We are living in an era, where the direct perception of the world is replaced by the mediated machine reception of sensations. Mixed Reality could enchant the world again. The modern World is somewhat called "disenchanted", it can equally be deemed an enchanted place, in which imaginary worlds and fictional characters replace the ordinary world. Many people desire an adventure, a fictional experience, something different and new. A person's imagination is capable of extraordinary ideas which are hard to extract. The digital dimension would be a step toward the extraction of these creative minds and bringing them to life. [Michael Saler (10)].

5. Conclusion

This paper presented many of unanswered questions and concerned with the future of AR/VR technology which has to be

addressed in order for this technology to reach its full potential. Mixed Reality can have serious impacts on our professional and personal lives. The notion of a perfect virtual world being constructed seems very tempting, but also making our everyday life look boring and tedious can potentially emerge and engulf us into this perfect artificial world. The virtual environments are not constrained by the rules of objects in the physical world, leading to an imaginary world, where everything is possible. The survival of humanity will be based on the approach to controlling this powerful technology. Research in the right direction is needed to keep the humanity normal and prevent us from becoming "contented zombies".

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