

Ethics In VR

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Abstract

This article talks about VR technology as a whole, what is VR and why is it currently being used, and in what way are people using it, the central idea of this article is to enlighten people and bring to their attention that shortly what ethical problems we might face and what are the problems we are currently facing, what ethical questions to ask and how to deal with them. I being a VR developer have tried to put insights as a fellow developer and an Artificial Intelligence student who thinks that Responsible AI is the key to the future, along with this I have mentioned scenarios that I faced as a developer and as a user what problems I might face. I have argued about some points made by other fellow Ethics writers as I think that some ideas are practically not possible. To know about Ethics in VR it is of utmost importance that you know what and how VR works. With this article, I intend to enlighten people and help them understand the ethicality in the perspective of VR.

What exactly is VR technology?

Virtual Reality(VR) is a technique for simulation of a real or virtual world by applying the theory of immersion into a virtual 3-D space in which stereoscopic vision, sense of hearing, sense of touch & sense of smell are very similar to that of real-world within a certain area. VR changes the way we experience a lot of things- games, websites, movies, specialized learning & training, etc. The most commonly used VR technology is the headset VR which comes with a wearable headset along with an input device and other accessories, the most commonly used are htc, google, and Samsung oculus. We can simplify the definition by saying that VR is a 360-degree experience of anything digital with an option for enhanced stimulus on sound and sometimes other sensory definition.

Why VR?

There are multiple domains where VR can prove to be beneficial. Currently, VR is being used mostly for gaming purposes and by industries for visual simulation. Following are the major reasons for why one should use VR and in what industries and how it is being used currently.

- Truly immersive display - due to its 360-degree environment it proves to be very popular amongst all users and that makes every visual display truly immersive.
- Industrial Recruitment - The companies are creating virtual environments under which the potential employees undergo some real-time problems faced by the company and can experience the work-life before joining the company.
- Work collaboration - In the case where a person is required physically, the companies are taking the help of VR so that the collaboration of people can happen virtually and this reduces the unnecessary travel and people can collaborate and the work will not be hampered.
- Ideas and future trends - A company before deploying its product can make the product available virtually for the mass and take opinions and suggestions before deploying it.
- Pain Management - The people having severe pain like in the case where people are suffering from cancer are treated with VR which distracts their mind from pain-reducing the intensity of pain.
- Medical Training - Aspiring doctors can learn about surgeries and all try operating on body parts without having to try on dead bodies or risking on actual persons.
- PTSD - Patients can undergo nerve-calming simulations and psychiatrists use various simulations to reduce the intensity of the trauma.
- Phobia treatments - The people with different phobias are treated with various simulations with basic to a high intensity which in turn help them to reduce the phobia.
- Other than this the other relevant areas where these are used are Anxiety treatments, paraplegics. Leisure, sales, etc.
- We can say that any type of work which can benefit from the immersive experience can use VR as a tool for their work.

How is VR currently used and where?

Out of the total VR applications in the market, the current stake of corporate usage is more than 45 % with individual use just 15-20 % and remaining usage by medical sector and educational sector combined. The current development and new projects in XR companies are majorly focused on the public sector wherein the firms like showrooms or industrial sectors want to display their final products to investors or in sales where people want to sell an individual product example car. The usage in education is also interesting and the no of users in that sector is increasing day by day but VR is limited to the headset and comparatively high in investment the trend is more towards AR in this. Over a period of next 5-8 years, I predict that there will be a very high demand for VR at the individual level considering the fact that Google and Facebook are developing and investing a lot in these. Right now the individual user is limited to some video experiences and game which are still under development as the market is not yet set for these categories, but we need to be prepared for it as soon there might be a huge upscale in individual VR and we then will have the need for ethics. - Abishek Moghe & Tapan Auti (Senior XR Technology Developers)

Why do we need Ethics in VR?

- Even though VR technology is comparatively new, to ignore the ethical virtue will be total foolishness. VR is improving day by day and it is just a few more years until it becomes the most widely used technology, history has told us that it's always better early than late and in the same sense I think that before it's becomes uncontrollably big it needs to be regularised.
- Once VR is in use on a very global scale to improve and set regulations based on ethics would be the most difficult task ever.
- To avoid the problem in the near future and to motivate the researchers in developing ethical VR is the need of the hour.
- To do this it is important to first know what ethical questions can arise in VR, what all do we need to consider, and in all sectors do we need to think of?
- Based on that analysis we need to define a common set of regulations and/or solutions to avoid this.

- There might be a wide range of areas that might impact the public related to physiological, social, or ethical aspects.
- I personally think we need to consider ethics in all those things where human intervention is present.
- To avoid any misuse and to preventing the violation of any human moral compass we need ethics in VR.
- The technology must be same irrespective of any conditions for all behave in such a way that no sentiments are hurt of any group we need to consider all those factors that can cause harm and to understand this and help developers develop standard technologies across all platforms, some guideline must be needed so we need the Ethics to ease the process.
- Brey says that "the design and operation of a computer system have moral consequences and therefore should be subjected to ethical analysis".

What Ethics do we consider in VR?

VR can place you in a different body and you can be anyone, VR enables one to have a myriad of possible experiences from a first-person perspective, VR technologies are pervasive and it is difficult for one to classify them.

According to Moore's Law, there is a correlation between technological advancement and social and ethical impacts, physiological and cognitive impacts, and behavioral and social dynamics, not only through regulations and laws (e.g., government and institutional approval), but also through ethics-in-practice (respect, care, morals, and education). There already are a lot of laws in different countries like in the United Kingdom, for example, typical research ethics requirements in a scientific context include respect for autonomy and dignity of persons, scientific value, social responsibility, and maximizing benefit and minimizing harm, but in case of VR, these are not enough we need to identify briefly what problems can arise and have a proper solution for those.

- **Values -**

VR shouldn't be biased about any one demographic and should be unbiased on every basis like race, religion, disabilities, etc. Any VR based application which is showing any one of such traits lacks values and is biased and will affect that demographic. Any VR-based technology should consider four factors in their design before implementing it and those are (i) Human Rights (ii) Responsibility (iii) Mentality (iv) Morality. There needs

to be a balance achieved between openness, reliability, and corporate rivalry and profit.

- **Privacy -**

A lot of papers talk about how VR can invade people's privacy and is it ethical if someone goes to anyone's home in VR, which will invade people's privacy, such scenarios were also mentioned in some article's regarding prohibited places and some holy places which have some restrictions. There is a lot which people just blindly put forward without a thorough study of the topic, VR is not something that once you put on you are into a virtual world which is exactly similar to that of our real world. Everything we see in VR is a simulation created by someone, so it's practically not possible for someone to just make a replica of anyone's neighbors residence with having a proper blueprint and interior of the place, this is also the case with restrictive and prohibited places, one in the first place can not make the replica in VR. The real privacy issue that can arise in VR is if someone through the application is taking your data, your behavioral statistics, and using that without consent, such type of data will cause privacy issues.

- But then the questions that arose are the data and pattern being captured are anyways being captured via our phones and we don't stop using them, then should we stop using VR?

The answer to that is there should be openness in whatever data is being captured and all the information about what is being captured should be clearly mentioned beforehand and taken consent for.

- **Violence -**

In 2013 a play was played in the UK called ' NETHER', in this play a father completed his desire of pedophilia through VR wherein he would sexually assault and kill the children. When questioned about this to various psychiatrists and psychologists the debate varied. The question raised here was that was this ethical or not. The father argued that he gets to fulfill his desire without anyone getting hurt and that he is saving people's lives as if this desire is not fulfilled he might do something in real life. As a fellow AI master's student and a responsible citizen my point of view over this is probably different. I think that we become what we feed our mind, in this case, VR is just an Immersive medium which at first might seem rather fulfilling but VR is just visual, there will come a time when visual won't be

enough as father's desire is physical and that cannot be provided by VR. Coming to the real issue I think that whatever is inhuman and morally not correct in the real-world is also unethical in VR.

- After concluding the above arose a question that killing is unethical in real life but their millions of war games where there is a lot of abuse and violence but are still in use so isn't this unethical then? Is a war game in video games anything different from a war game in VR? Does the immersive nature of VR makes it more realistic and hence more unethical?

The answer to the above question is that violence and abuse are also categorically divided and severely punishable offenses such as pedophilia, domestic violence and sexual harassment in any form are it video games or VR should be banned and are unethical. There should be an age limit for children to play war games and killing games as such related scenes might harm them in long run and at that stage, the mind is developed with what it sees rather than other behaviors so showing them such scenes or letting them play might change their perspective about these things and they might as well think killing is not bad, so all the games and simulations must have a restrictive approach and other mentioned categories should be completely banned.

- **Is VR safe?**

VR is generally used with the help of a VR headset. Currently, VR might not be that safe when used without any restrictions and guidelines. Overuse of VR can cause the following -general discomfort, fatigue, headache, eyestrain, difficulty in focusing eyes, increased sweating, nausea, difficulty in concentrating, stomach awareness, and blurred vision. These symptoms were detected amongst many users after very long and continuous use of VR (more than 1 hour), most common being headache, eyestrain, blurred vision. Along with these, there is also concern about the environment in which you are using the VR. if you are alone and using the VR then you might bump into something and you definitely if used anywhere in the open there are chances of accidents like depicted in the movie Johnny English. (Watch it to know what can happen if used without restrictions - <https://www.youtube.com/watch?v=SXUrzqgHZs8>)

- So is VR actually safe and how and when should one use one and under what conditions?

To make VR safer I have a set of guidelines and regulations which might prove to help reduce physical trouble and avoid accidents. I think that VR should not be used by anyone for more than 20 minutes continuously as long period and continuous usage can be harmful, also VR should not be used by someone alone in a room as he might bump into something and if he needs to use it alone then should use a 360 degree still walker along with it, although this solution might be a bit costly for an individual.

- **Virtual Embodiment**

The virtual embodiment can lead to emotional, cognitive, and behavioral changes. Virtual embodiment demonstrates the plasticity of consciousness for adaptation to different and changing virtual bodies, there are a lot of therapies that depend on virtual embodiment and prove to be of great benefit, like white racist people when put into black bodies didn't seem to mind the color and these therapies changed their perception, people with anger issues when saw themselves through the eyes of other person felt sorry for the other people and understood their mistake. Basically when in a virtual environment you are using some different avatar to depict yourself as a virtual embodiment. Right now this doesn't seem harmful but if we have to take a look at what this can turn into then the major issues arising would be identity theft, attachment towards the virtual self that makes yourself less pleasant in real life. To avoid this and to reduce the effect of this on the mind we have to take controlled actions so as to prevent any mishap in the future and a set of guidelines that can specify in which way and under which circumstances can we use the avatar and for what purpose should be decided based on the users history and combining it with psychology expert as he can tell based on the profile that whether the usage will be any harm to the user.

- **Mental Health Issues**

The main question which arose was the ill effects of VR on children and on adults. Arguably we can say that excessive use of anything by children is harmful to them in many ways, with many health problems arising from excessive use of VR the intensity of these increases on children. Exiting from VR may be problematic in some circumstances where individuals had been living in a virtual fantasy world with an enhanced virtual body. This is the downside of positive transfer effects known to occur from psychological therapy that employs VR. Some psychologists even argue that VR may cause severe anxiety issues due to such immersive content

but research proves that even in the 1980s and 1990s when the rendering quality was low people found VR to be immersive and compelling. Research by Zimmons and Panter found that participants showed the same level of anxiety for a different level of quality rendering and Slater proved that the higher quality or the lower quality didn't influence the participants' responses. I think that the mental issues relative to people can even occur without VR by use of video games too, similar use of screen time on Video Games may have a similar effect on the brain, so the major issue here is the content which is being shown and the respective mental health of the user before use. This is a very vague blame that people have put on VR. The real issue is when people will consider the VR world as real and get them out to the real world will be a task. There may be a problem with development wherein poorly constructed simulations intended to experience discrimination or sexism can exacerbate a diversity or cultural inclusivity problem rather than help remediate it. Social Isolations and desensitization are the general drawbacks of this era and there are no current means to avoid that. We are using VR technologies to treat mental disorders but if people use VR without restrictions and openly do whatever they wish to do then that can affect people's minds in such a way that popular VR applications could manipulate them extensively towards their benefit.

I fear that the day is not far when the VR applications will be used to treat the problems created by VR itself, Will that be ethical?

So what is the solution to all this? -

No one can guarantee that the measures will suffice to solve the problems but I can guarantee one thing for sure that this will definitely reduce the intensity and pressure which we might face in the future if did nothing, it's always better early than late.

I suggest the following code for Ethics of AI

- Ensure that by default no harm is caused to any individual due to the application
- Be open about the privacy policies and take consent and permission before data managing
- Follow one governing body or rule out regulations in the public i.e. enlighten the public about its pros and cons

- Limit the time for continuous usage of VR and set guidelines for single person use.
- Promote the development of safe VR under which one can reduce the intensity of ill effects caused
- VR application should have ethics right from the designing stage and that should be the combined effort of developers and the psychologists
- VR training should be given to all individuals using VR to treat patients as I think VR training is more difficult than curing the person with VR
- Enlighten people with the moral and social risks