RAMAIAH
Institute of Technology

**Department of Computer Science & Engineering**

*Seminar Report*

*on*

# Metaverse & its Societal Impacts

*Submitted in partial fulfillment of the requirements for the award of the degree of*

**Bachelor of Engineering in Computer Science & Engineering**

*By*


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*Under the guidance of*


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2021

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# CERTIFICATE

*This is to certify that the Seminar entitled "Metaverse & its Societal Impacts" is a bonafide record of the Seminar work done by Gaurav V (1MS18CS046) under my supervision and guidance, in partial fulfillment of the requirements for the B.E in Computer Science & Engineering, M S Ramaiah Institute of Technology, Bangalore for the academic year 2021-2022.*

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# Acknowledgement

The satisfaction and euphoria that accompany the successful completion of any task would be incomplete without mention of the people who made it possible and support had been a constant source of encouragement which crowned my efforts with success. I am deeply indebted and would like to express my sincere thanks to our beloved principal **Dr. N.V.R Naidu**, for providing us an opportunity to do this technical seminar. My special gratitude to **Dr. Annapurna P. Patil,** HOD, Department of Computer science and engineering, RIT for her guidance, constant encouragement and wholehearted support. My sincere thanks to my guide **Chandrika Prasad**, Assistant Professor, Department of Computer Science and Engineering RIT for his/her guidance, constant encouragement and wholehearted support. Finally, I would like to express my sincere thanks to all the staff members of department of computer science and engineering for their valuable guidance and support.

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# Abstract

The cyberspace has continued to evolve since the Internet's popularisation in the 1990s. Social networks, video conferencing, virtual 3D worlds (e.g., VR Chat), augmented reality apps (e.g., Pokémon Go), and Non-Fungible Token Games(e.g., Upland) are just a few of the computer-mediated virtual environments developed. Such virtual worlds have provided us with varied degrees of digital transformation, despite the fact that they are not permanent and disconnected. To further assist the digital transition in every element of our physical life, the term "metaverse" has been coined.

The notion of a massive, unified, permanent, and shared Internet lies at the heart of the metaverse. While coming technologies like Extended Reality, 5G, and Artificial Intelligence may make the metaverse appear futuristic, our cyberspace's digital 'big bang' is already here. The Metaverse is still in its nascent stage but it has a huge scope for growth. The metaverse ecosystem, in terms of applications, allows human users to live and play in a self-sustaining, permanent, and shared reality.

In the digital age, the real appears with the virtual and does lead to many societal changes which can be good or bad. How Metaverse will impact our lives, depends a lot on us, on how we will use it. Just like with the other innovations some will use the metaverse for good and others, for bad things.

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# Introduction

METAVERSE is a hypothetical synthetic environment related to the physical world, defined by the prefix "meta" (implying transcending) and the term "universe." The term "metaverse" was originally used in Neal Stephenson's speculative fiction novel Snow Crash, published in 1992. The metaverse is defined by Stephenson in the novel as a huge virtual environment that exists alongside the actual world and in which people communicate through digital avatars.

## 1.1 What is the metaverse ?

It's a combination of multiple elements of technology, including virtual reality, augmented reality and video where users "live" within a digital universe. Supporters of the metaverse envision its users working, playing and staying connected with friends through everything from concerts and conferences to virtual trips around the world.

Technologies that make up the metaverse can include virtual reality  characterized by persistent virtual worlds that continue to exist even when you're not playing as well as augmented reality that combines aspects of the digital and physical worlds.

## 1.2 The economy of the metaverse

The Metaverse translates to a digital economy, where users can create, buy, and sell goods. And, in the more idealistic visions of the metaverse, it's interoperable, allowing you to take virtual items like clothes or cars from one digital metaversal platform to another.

In the real world, one can buy a shirt from the mall and then wear it to a movie theatre. Right now, most platforms have virtual identities, avatars, and inventories that are tied to just one platform, but a metaverse might allow you to create a persona that you can take everywhere as easily as you can copy your profile picture from one social network to another.

## 1.3 Effect of metaverse as a form of escapism

Humans are social mammals, we love and need to communicate regularly. Social medias give humans means to express ourselves and receive instantaneous reaction from friends. The emergence of virtuality technology will bring new possibilities for human interaction. Therefore, the combination of these technologies with social networks seem unavoidable. Virtual Reality (VR) are predictable to give an enormous impact on daily life. According to a Cisco report VR and AR experience could be involved in peoples day-to-day lives and found that it can be more like an experience where the virtual environment and software applications get into a normal day-to-day routine. The immersive technologies could lead to loneliness and escapism. In the virtual world, it is only the spatial presences, it can trick the brain to believe in the virtual.

Escapism is defined as the act of withdrawing from the problems of the real world into imaginary worlds. In the digital age, the real appears with the virtual. Good escapism allows people escape from a narrow world into a broader one, allowing your mind to travel to the place that the body cannot go. Bad escapism is when one escapes from the possibility of a broader world into a narrower or safer one, to avoid taking difficult actions & decisions. The escapism can be considered as unhealthy depending on how much escapism a person indulges in and how extensive that world is away from reality.

The few notable aspects of unhealthy escapism are as follows :-

- **Procrastination**: an escapism where people stop working hard or putting effort into something and try to delay tasks as much as possible
- **Psychosis**: a situation where a person gets confused with the boundaries between what is real and what is not.
- **Denial**: people isolating themselves because of the built illusion layer and the unwillingness to grasp reality around them
- **Addiction**: a scenario where people are not capable of control their own habits.

## 1.4 Existing models of Metaverse

Metaverse is built on the existing model of extended reality. Extended reality (XR) is a term referring to all real-and-virtual combined environments and human-machine interactions generated by computer technology and wearables.

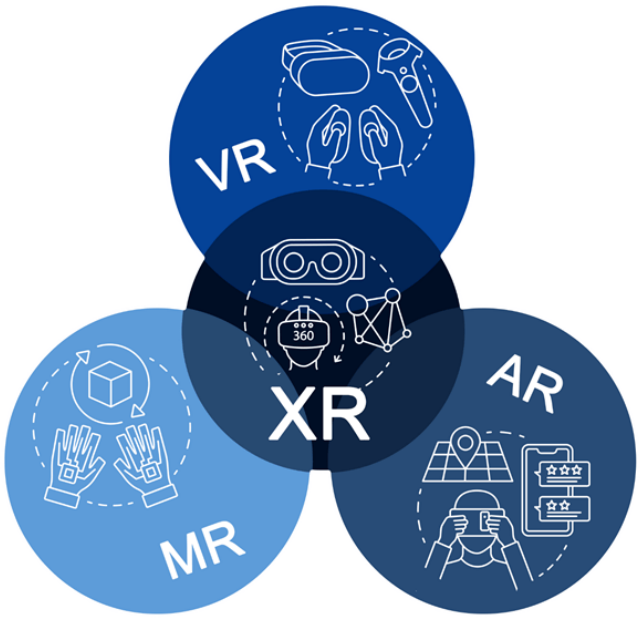


Fig. 1 Extended reality Venn Diagram

XR is an emerging umbrella term for all the immersive technologies. The ones we already have today—augmented reality (AR), virtual reality (VR), and mixed reality (MR) plus those that are still to be created. In augmented reality, virtual information and objects are overlaid on the real world. This experience enhances the real world with digital details such as images, text, and animation. You can access the experience through AR glasses or via screens, tablets, and smartphones. In contrast to augmented reality, in a virtual reality experience, users are fully immersed in a simulated digital environment. Individuals must put on a VR headset or head-mounted display to get a 360 -degree view of an artificial world that fools their brain into believing they are, e.g., walking on the moon, swimming under the ocean.

In mixed reality, digital and real-world objects co-exist and can interact with one another in real-time. This is the latest immersive technology and is sometimes referred to as hybrid reality. It requires an MR headset and a lot more processing power than VR or AR. Microsoft's HoloLens is a great example for it. The Metaverse follows the XR model, where all 3 realities merge to form one complete experience.

## 1.5 Applications

The Metaverse has multiple applications ranging from the Healthcare sector to the real estate sector.

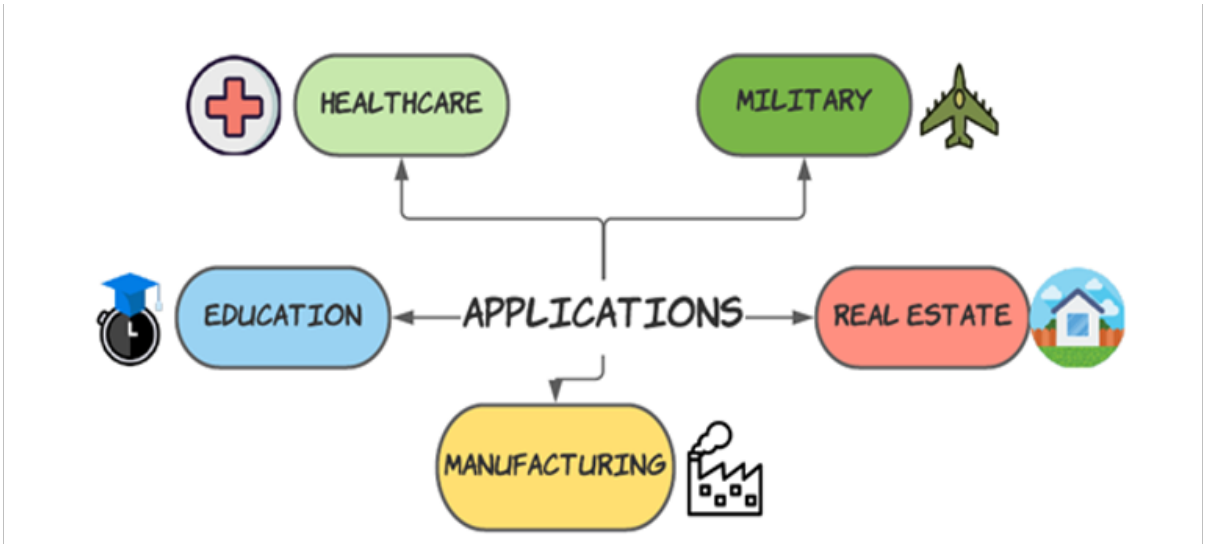


Fig. 2 Applications of the metaverse

**Healthcare** : The deployment of augmented reality in the healthcare sector has a substantial value in training and strengthening the skills and knowledge base of future medical professionals. Surgical assistive tools are technology like the Microsoft HoloLens that surgeons utilize to help them with and speed surgical procedures.

**Military Applications :** Tactical Augmented Reality (TAR) is a technology that appears similar to night-vision goggles (NVG), but it has many more capabilities. It may display a soldier's precise location as well as the positions of ally and hostile forces. The system is attached to the helmet in the same manner that the goggles are, and it may be used at any time of day or night. As a result, TAR effectively substitutes the standard handheld GPS gadget and eyewear.

**Real estate** : The capacity to give potential clients a realistic and immersive experience is VR's greatest strength. Real estate marketers may take advantage of this power by allowing clients to ultimately see the property before making a choice. Several multimedia features, such as ambient music, narration, and light-and-sound effects, can also be included in specific VR tours.

**Education** : Traditional teaching approaches will never attain such a high level of effectiveness in highlighting concepts through visuals. Regardless of their age, students will always choose to sit and watch something rather than read it. Virtual reality technology is fascinating because it can produce incredible experiences that could never be "experienced" in real life. With the usage of this technology, students will be more motivated to learn.

## 1.6 Market Size & Valuation

The Metaverse is still in its nascent stage but it has a huge scope for growth.

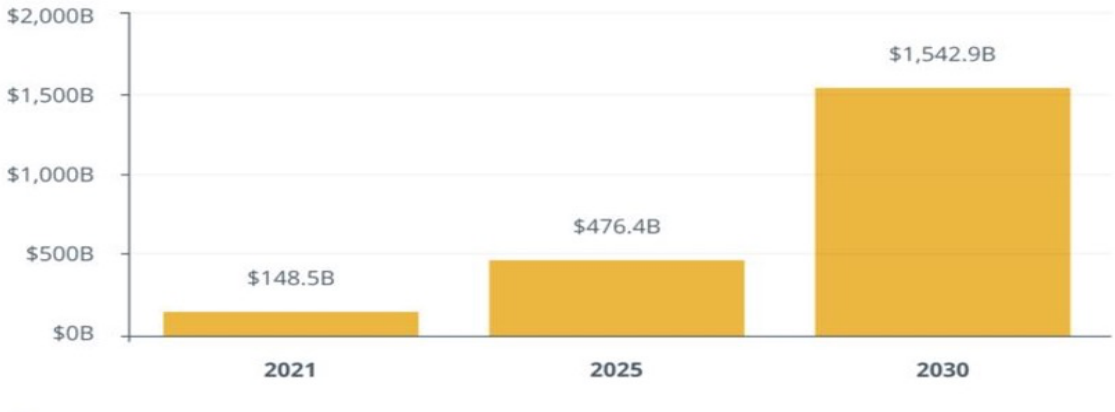


Fig. 3. Metaverse market size

Recent surveys and studies have shown Metaverse Market to Witness Promising Growth to Reach a market value of $1.5 Billion by the year 2030. This is a significant shift in the digital world that looks and feels reminiscent of the social media revolution back in 2007. One catch to this tech growth spurt is that it's happening much quicker and is far more intense. Developing Metaverse Platforms for Education and entertainment Sector may open avenues for the market. The Metaverse is likely to produce trillions in value as a new computing platform or content medium. In its full version it becomes the gateway to most digital experiences, a key component of all physical ones, and the next great platform.

# Literature Review

With more time spent on internet-based games and recreational apps, a new trend of digital escapism has emerged, as well as a need for privacy in the virtual world. When we speak of escapism, we often conjure up images of guilt. Excessive internet usage, usually for enjoyment, can develop to 'internet addiction.' As a result, psychological problems develop. It leads to "Internet Disorder Syndrome" or "Digital Escapism," which can lead to stress, despair, goal drifting, insomnia, and anxiety. [1]

Augmented and virtual reality (AR/VR) technologies are regularly used in psychology research to complement psychological interventions and to enable an individual to feel as if they are in an environment other than that of their immediate surroundings. New research directions in personalized mental health virtual reality (VR) therapy are proposed, particularly in the areas of prevention and treatment of stress-related disorders. Personalized estimation of the patient's emotional state is based on appropriate artificial neural network algorithms, which integrate various features of the patient's multimodal response, like autonomic physiology, voice, and facial expressions. This approach is in line with personalized psychiatry, with potential to significantly improve psychological and biological state of the patient in the larger framework of Psychiatry for the Person. [2]

Touch is one of the first sensations we learn about at birth, and it is the one sense that may enhance our understanding of a variety of circumstances. We suggest in this work that emotions, including touch, be used in virtual reality (VR) to generate a simulated intimacy that is now only possible through in-person interactions and conversations. We can improve a discussion or engagement in VR by simulating nonverbal clues. Using haptic devices to replicate contact between users via sensors, as well as machine learning for emotion identification based on data collected, all in the hopes of simulating intimacy in conversation regardless of distance or VR. We describe a study direction on how to imitate in-person communication in virtual reality. [3]

# Summary of Review

The existing work may be divided into three groups based on the results of the survey. Metaverse as an escape tool, Metaverse as a good psychological tool for treatment The Metaverse's absence of genuine input and perceptions.

Escapism is a far larger problem that we are now dealing with. People lose their brains in the beautiful worlds shown in the metaverse, and they forget how to leave their fantasies on the screen and return to reality. Shining proponents of cutting edge virtuality, embodying the alluring unreality of something erroneously conceived of existing on the other side of a screen.

In psychology research, augmented and virtual reality (AR/VR) technologies are frequently utilized to supplement psychological therapies and allow people to feel as though they are in a different setting from their immediate surroundings. New research paths in individualized mental health virtual reality (VR) therapy are offered, with a focus on stress-related diseases prevention and treatment.

Mental health issues are inextricably linked to the environment. Individuals can regularly experience their troublesome situations in virtual reality (VR), computer-generated interactive settings, and be taught how to overcome issues using evidence-based psychological therapy. Virtual reality is making its way out of specialized labs.

# Conclusion

Technology sets the direction of modern history and defines it. The Metaverse is still in its nascent stage but it has a huge scope for growth. The Bright Side of the Metaverse is that it will allow people to experience an endless virtual world, where they can do things they only dreamed of using an avatar.

The metaverse has the ability to bring people together and create lots of fun by offering mysterious aura of alien worlds while make everything more enjoyable and more interesting. It also provides an opportunity to improve work at home and home schooling

The Dark Side of the Metaverse is the separation that will happen between people and reality. It is that perspective in which technology fully catches human attention, distracting us from the real world completely. The metaverse can generate addiction and make one lose track of time which as a result separates us from the real nature and the real world by overstimulating our senses.

How Metaverse will impact our lives, depends a lot on us, on how we will use it. Just like with the other innovations some will use the metaverse for good and others, for bad things. We are experiencing the beginning of the next step in our history so let’s embrace it with open arms.

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