

PRACTICE AND EVALUATION OF ENGINEERING IN METAVERSE

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Abstract. Recently, we hear new terms every day in the rapidly changing world. But is the term Metaverse also present among these terms you have heard? In general, what do you think this word can mean? How different are the possibilities that the Metaverse has created for us than the inter, that the human race has needed its universal use? What are the positive aspects of the application of the new opportunities that this technology brings to engineering specialties? Is the Metaverse just owned by a specific country? How might the capabilities of the Metaverse impact at least engineering-oriented job opportunities, and the business world, and by the way will it benefit us?.

Keywords: Metaverse, WEB3, Augmented Reality, Virtual Reality, Metapolis, avatar, VR office, Meta labs.

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1 Introduction

As we know, a few months ago, the term Meta, as it was formerly known, began to gain popularity shortly after Mark Zuckerberg, the CEO of Facebook as it was formerly known, expressed in an interview that the future of the Metaverse was bright. According to him, this will be the next biggest innovation after mobile internet. The word was first mentioned in 1992 in Neal Stephenson's Snow Crash. The term metaverse is also known as 'cyberspace'. To get an idea of exactly what the Metaverse is like, we can use the example of Minecraft, which is a sandbox-style video game. Metaverse has more potential than gaming and a virtual fantasy world. If one of the things that come to mind when we think of the Internet is WWW - the world spider's web, in other words, Web (Web 1.0), then the main concept that will come to mind during the Metaverse should be Web3, or Web 3.0, the more advanced version of the Web after Web2. It is already known to everyone that the old version of the Internet is two-dimensional. Metaverse, on the other hand, is full-sized and the user feels it at every step (Stephenson, 1992; Conti & Schmidt, 2022).

Here, users can make online payments using cryptocurrency. This kind of technology is based on 'Blockchain' technology. An NFT (A Non-Fungible Token) is a digital asset that represents real-world objects such as art, music, in-game items, and videos. They are often bought and sold online with cryptocurrency and are generally coded with the same underlying software as many cryptos. In recent days, people have seen many events in the Metaverse, for example, concerts, weddings, etc. they spend At that time, the organizers and guests send their avatars to that party and have fun, dance or visit a certain place virtually in this virtual environment as if they were themselves. On the one hand, this cartoon that we are watching, even if it includes us in the film environment full of animations and gives the feeling of 'everything is very real,

it can be dangerous in a certain way if it is not used correctly. In addition, you can go back in time or into the future by entering the environment built by the developers - engineers at Metaverse, or you can see and appreciate the Moon, Mars, the stars where appropriate, and even the entire universe by having the opportunity to zoom in on them. In a simplified definition, the Metaverse is a virtual world where people can shop, play games, research, and communicate. One of the first things we have to do to walk in this world is to create an avatar that looks like us or has a physical appearance that we like in our imagination. These avatars will be able to do any work in the real world as virtual us in the virtual world, in other words representing us. Most of the time we say “I surf the internet - social media”, but they are not exactly real places. Although it is a kind of real space, it is still only the tip of the iceberg. In other words, for your understanding, the “Big Bang” happened then, and now we are in the process of the (virtual) “explosion” that will result in the Metaverse. Although personal computers and smartphones allow access to the Metaverse, AR/VR glasses are needed to experience this world. By the way, Metaverse, just like the Internet, does not belong to any country, nor it is managed by a certain institution, administration, or organization. In other words, the Metaverse does not exactly have a center at the moment (Kim et al., 2022; Sinha, 2022).

Everything from blockchain to cloud technology and 5G (5th generation of cellular mobile communications) has been accelerated by the global pandemic and made possible by major technological developments. We can feel a deeper shift towards the digital economy with the implementation of lean million-dollar investment programs in our lives. Future changes will be brought about by the revolution of these 5 key industries:

1. Game
2. Media and entertainment
3. E-commerce and retail sales
4. Production
5. Architecture and engineering.

Various keywords in the 6 trends of the Metaverse over time also changed, demonstrating its major development and progression through stages. Two of them:

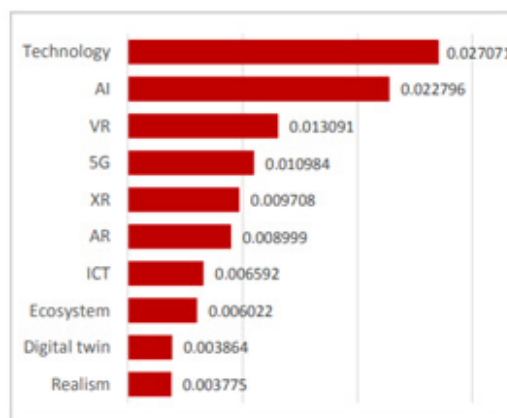


Figure 1: Metaverse Trend 1 Keywords

In other trends, keywords are mainly related to startup, business, avatar, work, university, education, security, youth, adolescence, COVID-19, industry, virtual person, avatar, etc.

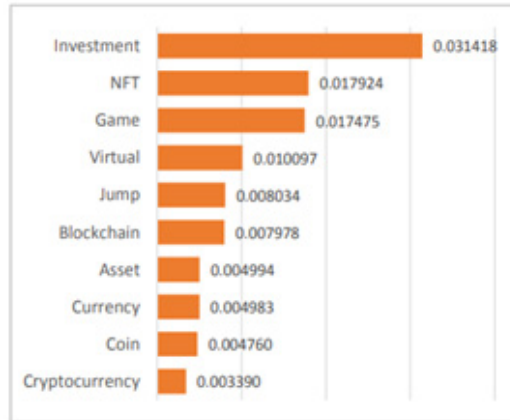


Figure 2: Metaverse Trend 1 Keywords

2 Impact of metaverse on engineering professions

Metaverse's ongoing development over several years has allowed the world's top brands to move their virtual marketplaces to Metaverse. Well-known companies are now aligning their online stores with their offline stores in the virtual world. Some companies want to build their online store in completely different designs. Such differences are a reason why users and customers flock to Metaverse. Here, the technology companies developing Metaverse, Metaverse developers are gaining more experience day by day and improving their services based on customer demand. At this time, only information technologies, information security, computer, process automation, artificial intelligence, etc. not only students studying in informatics-oriented specialties such as engineering but also energy, electronics, land reclamation, etc. students in other engineering majors can also benefit from the wide variety of opportunities provided by Metaverse. Of course, in addition to conducting new research on education and acquiring new materials, Metaverse is mainly used by students in different places and by different people in the 4th year, which is considered the main tool for learning practical knowledge, which is considered essential for the engineering major. is to apply to practice programs. Some of the popular companies using Metaverse are listed below:

Autodesk, Benetton, ByteDance, Google, Snapchat, Nike, Coca-Cola, Louis Vuitton, Amazon, Selfridges and Pokemon, Gucci and Roblox, Meta, Microsoft, Nvidia, Roblox, Shopify, Zara, Gucci, Adidas, Stella Artois, Atari, Burberry, Forever 21, Vans, Ralph Lauren, Tommy Hilfiger, Balenciaga. In addition startup companies such as NextMeet, The SandBox, Union, etc. have also been built for and continue to provide services for Metaverse. As it turns out, Mark was right, the future of the Metaverse is indeed bright. This, in turn, brings the practical opportunities of students initially studying engineering specialties to the international arena in a serious sense. As we know, the vast majority of higher education institutions in our country are satisfied with the implementation of practical experience only within the country. This is since it is not financially feasible to apply the experience abroad for a certain period, not only to selected students or those with a high average (GPA - Grade Point Average) but at least, in general, sending our young people studying in all engineering specialties to technically developed countries. But imagine, if laboratories or practical training classes are built for this purpose in higher education institutions, and those laboratories are provided with AR/VR glasses, then students can do internships in quite different and varied international companies in a remote but realistic virtual way for any period. they can get a chance.

Let's think this way, you are currently being given internships in a virtual world by an avatar of famous developers, software engineers, data scientists, and even company founders - CEOs, for example, Jeff Bezos, now CEO of Apple Tim Cook, the latest technology products at the moment are shown and you touch them, refine them, try to create new ones and apply this technology

to your startups, while physically you are inside a higher education institution in Azerbaijan. The fact of how great and gratifying and incredible this opportunity is, when appropriate, can ensure that those students approach the theoretical lessons with enthusiasm and interest and increase the desire to learn and apply more. Thus, if the establishment of such virtual relations is approved by the contract between the university and the company management, this, in turn, can create new opportunities for students and even other employees, including teachers and engineers.

On the other hand, by adapting to new technologies such as 6G in our rapidly changing world, we can increase our productivity and save time and space with new methods that are completely different from traditional methods. Therefore, especially for engineering students, constant exposure to such innovations can lead to incredible opportunities and contribute to the growth of the country's industry, economy, and prosperous future.

3 Conclusion

Thus, the young professionals who acquired the opportunity to practice in Metaverse will already have gained the ability and, most importantly, the experience of working in offices in the Metaverse environment, which, in turn, will be the most basic and necessary step in their future work lives, as well as meeting the requirements of the times. Most of the Metaverse is still under construction. In other words, virtual spaces, virtual roads, virtual tools, and devices in this virtual world are being built, but also the virtual personalities-avatars of the people who will use them continue to be renewed and multiplied day by day. Korean PropTech company Zigbang has already opened a 30-story VR office called Metapolis. Employees choose an avatar and travel to their desks via elevators and corridors. When they encounter a colleague's avatar, their webcam and microphone are activated so they can chat. The webcam and microphone then turn off automatically as the avatar moves away. In addition, the application of Metaverse removes the barriers between engineers and architects and customers and users. They can create exactly what type of building the client wants with its details in 3D, and the engineer will build the model according to it, and let the client feel the material to be used, and they can work together in harmony. This type of cooperation is very convenient for the client, engineers, and architects, by allowing them not to create additional models, to prevent the loss of time spent on their creation, and to apply them directly to the initially created prototype model.

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