Chapter 1
Artificial Intelligence (AI)–Centric Model in the Metaverse Ecosystem

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ABSTRACT

Metaverse is a prodigy that combines the real and digital worlds, enabling avatars to participate in a variety of activities. AI will have an influential impact on the future of Metaverse, as it will enable Metaverse to be user-centric by introducing features like augmented reality and virtual reality. This chapter will provide insights about how AI-centric modeling and AI concepts can boost the emerging world of Metaverse. AI will be an indispensable component of Metaverse, from the foundational layer to the experiential layer. AI will enable Metaverse to be user-centric by introducing features like augmented reality and virtual reality, creating an immersive experience for the user.

INTRODUCTION

Metaverse is a 3D concept that facilitates the technology to map or draw virtual avatars parallelly and acts as a bridge between the users and the digital world. It can be understood as virtual cyberspace which mixes up the real and digital world and converges the two by providing the facility of internet and other technologies. It can be understood as an infinite universe where communities of people can collaborate

and enjoy the mechanism of augmented reality, virtual reality, extended reality, online life and much more. Artificial Intelligence based theories and equipment along with deep learning concepts are needed for metaverse's better development to provide more powerful features of computation, perception, interaction, cooperation, reconstruction, virtual identities and assets, life similar experiences, dialogues, and other different features.

In Ready Player One, Wade Watt says," A gifted human player could always triumph over the game's AI because software couldn't improvise" (Forbes, 2022). Although the AI concepts being used in Metaverse has to acquire and understand more of improvisational and human like qualities to thrive, it still remains a software program that relies a lot on real human interactions to achieve successful operations and thus even the AI thriving in Metaverse will require to learn about how efficiently it could improvise itself and be more and more human-like, thus it needs real people to succeed.

AI modeling stays as the most crucial force behind Metaverse because Metaverse can't function without using the different fields of AI be it speech recognition, machine learning, robotics, reasoning, neural networks, expert systems, planning, etc. enabling the existence of interfaces, avatars, chatbots, and much more. Metaverse is today's emerging hype and it will take immersive and reckless research in the field of AI to make it more useful and fruitful for the users and as gradually this is achieved we will witness this new technology which can be the next Facebook but much more reciprocal, helping the people engaged in business by generating enormous virtual events, enabling the companies to advertise and sell their goods to great extent hence evolving a new media expertise in advertising, boosting up the cryptocurrency, e-transactions, e-wallets thus easing out everything. AI modeling is definitely the 'head honcho' in the emergence of Metaverse and a lot will depend on AI in the future success of Metaverse. The different domains of AI mutually contributes to the development of a proper functioning metaverse. Speech recognition enables to recognize the user's speech convert icontcontributext and do the required natural language processing on it. While the Computer Vision is used in playing with the images and the videos in the world of metaverse. Virtual reality for making the virtual environment and augmented reality for making the user able to work with the digital information. Data collection and sharing is used to gather information from various aspects and either store it or share it on the need basis. Even the AI driven bots are used to enable users to do various tasks including giving instructions, performing transactions, providing answers to various questions and much more. Concepts of Deep Learning are used to create the twins by giving it a real touch.

A basic metaverse platform consists of seven layers, including infrastructure, human interface, decentralization, spatial computing, creator economy, discovery, and experience. AI algorithms and techniques are used in each layer to make the processing easier, favorable, and user friendly. Infrastructure provides the different options of infrastructure available, while human interface directs to various devices and technologies. Decentralization provides technologies like blockchain, AI agents, edge computing, spatial computing, creator economy, discovery, and experience (Artificial intelligence for the Metaverse, n.d.). AI algorithms and techniques are used in each layer to make the processing easier, favorable, and user friendly.

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