Chapter 7
Implementing AI Techniques to Address the Challenges Surrounding Cryptocurrencies

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ABSTRACT

The research work is focused on examining the role of artificial intelligence (AI) in addressing challenges associated with cryptocurrencies like Bitcoin, Ethereum, etc. The popularity of Bitcoin has sparked the emergence of new alternative cryptocurrencies, commonly referred to as ‘altcoins’. Simultaneously with its growing popularity and public awareness, the Bitcoin system has been branded as a haven for security breaches, selfish mining, money laundering, extreme volatility, and unpredictability of future prices. To address these challenges, stakeholders accepting cryptocurrencies must apply AI techniques to process and analyze large amounts of cryptocurrency data. In this context, this chapter discusses the recent research work to assist the researchers and practitioners in the cryptocurrency domain to make fact-based decisions by using AI techniques. Consequently, the chapter provides a detailed review of the background on fiat currencies, cryptocurrencies, challenges associated with cryptocurrencies, and the role of AI techniques in addressing those challenges.
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1. INTRODUCTION

The global financial market experienced rapid growth from the 20th century to the early 21st century. As financial systems are the circulatory system of world economies, they are constantly transforming, evolving, and adapting to certain economic and technological requirements, providing an atmosphere for the efficient functioning of financial relations and commodity-money (Mikhaylov, 2020). Since its inception, money has been changing its form, but it still serves the same basic functions as a store of value, a medium of exchange, and a unit of account. As a consequence, money is now one of the most powerful social and financial instruments. It is impossible to imagine a world without cash or noncash in daily life. While it is impossible to say that noncash money is replacing cash, their turnover is faster than cash. This is due to the ease of use of electronic payment systems and the current state of technological advancement, which allows for contactless transactions at the terminal and online transactions over the Internet (Beck, 2018). Since they reflect a modern understanding of the type of money and the security of transactions, digital currencies have the ability to develop existing payment systems and financial institutions (Seetharaman et al., 2017). For example, since 2019, one of the world’s financial leaders, the United States, has been conducting research and taking steps to integrate Cryptocurrencies into its internal payment system (Mikhaylov, 2020). The US Congress passed the ‘Crypto-Currency Act of 2020’ for consideration at the end of 2019 (Mikhaylov, 2020).

Since the inception of the Cryptocurrency craze in 2009, many investors have flocked to Cryptocurrencies in the hopes of finding the hippest way to ‘get rich fast’ (Baum, 2018). As a result, numerous Cryptocurrencies have been created since 2009, with over 4000 in existence as of 2021 (Statista, 2021). Many crypto-investors have profited handsomely from their investments in Cryptocurrencies and reaped the advantages of having money in a decentralized exchange. This nascent Cryptocurrency industry, however, has a dark side. Fraudsters and con men have grown with the times, discovering new ways to defraud unsuspecting crypto-investors every day, as they have for decades. This new wave of fraudsters has invented new ways to coordinate pump, dump schemes, build fictitious initial coin offerings, commit Ponzi schemes, pull exit schemes, and formulate many other schemes to steal investors’ Cryptocurrencies. According to a recent survey conducted by Bitcoin.com News, Cryptocurrency investors lose an average of $9.1 million every day to Cryptocurrency fraud (Baum, 2018). Furthermore, since any government legislation does not yet govern Cryptocurrencies, it is difficult to pursue redress for losses incurred by fraud (Jung et al., 2019).

With millions of transactions being conducted via various exchange services and a large number of Cryptocurrencies being used as financial assets, Cryptocurrencies