


Chapter 3

Automatizing Crypto Asset Tracking in Cyber Crimes

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ABSTRACT

Blockchain technology has created a major transformation in the digital world with features such as decentralization, security, transparency, and traceability. Emerging with Nakamoto's introduction of Bitcoin in 2009, this technology finds applications in various sectors, primarily finance, supply chain, healthcare, and public services. The fundamental principles of blockchain are based on elements such as hashing, distributed ledger technology (DLT), and consensus mechanisms. Innovative technologies such as smart contracts and side chains increase the potential of this system. Cryptocurrencies are an application area of blockchain technology and come across different types such as bitcoin, altcoins, and NFTs. APIs facilitate software development processes and enable integrating systems with blockchain. In the investigative phases, blockchain traceability provides a significant advantage in solving crimes like crypto fraud. This study aims to automate the manual tracking of crypto-related criminal transactions by implementing an algorithm based on the FIFO principle.

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INTRODUCTION

Blockchain technology has provided a revolutionary transformation in the digital world with features such as security, transparency, decentralization, and traceability. Introduced by Nakamoto with Bitcoin in 2009, this technology has quickly expanded its impact and found application in a variety of fields, including public services, healthcare, and supply chains, particularly in the finance industry (Frizzo-Barker, Chow-White, Adams, Mentanko, Ha, & Green, 2020). Building blocks like distributed ledger technology, hashing, smart contracts, and consensus mechanisms form the foundation of blockchain's fundamental operations (Tripathi, Ahad, & Casalino, 2023; A. K. Abed, 2025; Khalaf & Steiti, 2024; Zaman & Mazinani, 2023).

By guaranteeing the safe storage of data and the traceability of transactions, these building blocks offer high security, cost savings, and operational efficiency across a range of industries (Ang et al., 2025; AlShuaibi et al., 2025; Almelehy et al., 2025). Innovative digital assets like cryptocurrencies and their related altcoins, or non-fungible tokens, are a significant application area for blockchain technology. But these digital assets' anonymity also makes it easier for crimes like money laundering, fraud, and illicit transactions to occur. Tracking crypto asset transfers by hand is a laborious and error-prone procedure, even though the blockchain network's traceability feature is a crucial tool in the detection and resolution of these crimes (Aldossary et al., 2024; Ali and Shehab, 2023; Davarasan et al., 2024; Burhanuddin, 2023; Jishkariani, 2024; Saleh et al., 2023).

The aim of this chapter is to explain how cryptocurrency transfers are realized and develop an application using an algorithm that adheres to the First-In-First-Out (FIFO) principle to automatically analyze cryptocurrency transfers. WinForms technology and C# programming language have been used to create a software application. In order to track cryptocurrency transactions more quickly and effectively, the application intends to automate manual processes and offer better defenses against blockchain-based fraud. It is desired to make a substantial contribution from a technical and legal perspective by showcasing the security and transparency capabilities of blockchain technology.

WHAT IS BLOCKCHAIN?

Using distributed ledger technology, Nakamoto's Bitcoin-based electronic cryptocurrency payment system, created in 2009, allows for safe and transparent network transaction verification (Tripathi, Ahad, & Casalino, 2023). Blockchain creates a structure that is resistant to fraud by sharing transactions that are encrypted using the hashing method among network members. This system ensures that transactions

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