Blockchain Technology for Authentication and Validation Social Network Accounts

Zacky Althero[1], Jazlan Syahreza[2], Alvano Ortiz[3]

Computer Engineering, The University of Toledo[1,2,3]
2801 Bancroft St, Toledo, OH 43606, United States
e-mail: zacky889@yahoo.com, jazlansyah234@gmail.com, alvona_ortiz@yahoo.com

Abstract

SNS establishes a point of trust by dispersing personal data and profile pages in blocks and authenticating them with blockchain technology. This study suggests a useful and simple technical approach for verifying social network profiles. This approach can be used by anyone to verify a social media account, increasing the likelihood that the real person behind the account will be discovered. Additionally, bogus accounts are exposed in this manner, improving social media security and credibility. Only developers are allowed to directly alter the platform's properties because blockchain technology is a participatory method between private information and the platform. The actual account holder's personal data is shown on the profile page and is kept in encrypted blocks that are challenging to alter, copy, or steal.

Keywords: *Blockchain, Technology, Authentication, Social Network.*

1. Introduction

Information technology has made great strides in people's daily lives. Human interactions represent these aspects. Communication is designed to represent a new concept of person-to-person communication through technology, not limited to communication through phone visits and exchanges. These social networks allow us to interact with other users anytime, anywhere through electronic platforms [1].

Social networks are websites that provide services that allow people to express themselves and meet others with similar interests [2]. Social networks are virtual communities that enable users to share ideas and interests and make new friends. The social networking site has many advantages that set it apart from other websites. One of these features is the ability to create personal accounts that users can sign up for to access the website. The ability to create profiles allows users to post personal information about themselves, such as Profiles, profile pictures, or recent activity, and the ability to interact with other users by friending, creating groups or following other users [3]. In addition, there are posts announcing the latest news and updates about other site users. In addition to being able to post and edit content, it can be text messages, photos, videos, and more. Users can interact with other users' posts by writing comments, expressing different opinions, and expressing admiration for their posts [4]. Users' challenges and threats on their social networks are increasing daily. These threats include trust, users' trust in relationships with others, inability to verify people's identities and account authenticity, and lack of mechanisms. It can effectively distinguish between fake and real pages [5].

The severe lack of trust in the treatment of most users is usually due to the frequency of account creation for the game, but over time it has become more common to verify the account holder's identity. It is known. Salary increased. Usually, fake pages appear among users to spread fake news and rumors or to steal followers [6]. You need a mechanism to authenticate social media accounts. Some social networking sites have developed mechanisms that allow followers to identify the actual user pages they choose to follow. B.

Prevent fake sites or display logos to distinguish them from genuine sites. Facebook, Twitter, and Co. also use the blue tick icon on their profile. These mechanisms and procedures are specific to certain categories (media, sports, government, etc.) Fake websites that spread information and rumors. To get this green mark, you need to submit some documents to verify the identity of the website owner.

Furthermore, current procedures only apply to certain categories, and the process of verifying and validating an individual's identity is complex. Most users are not able to authenticate their website for various reasons, including the Blue verification process is a bit complicated and time-consuming. Verification depends on the number of followers with the most influential accounts, such as B. Corporate Twitter is preferred. Therefore, this study aims to find a free and technical mechanism to authenticate its website in social networks by integrating blockchain technology [7]. One of the ways to improve these sites is to take advantage of the blockchain functionality and the tools it provides to record and verify personal data. This reduces the complicated steps of authenticating their social media accounts and verifying the account holder's real information. This verification usually appears as an icon that appears as a blue checkmark on individual pages, indicating that the site is trusted. New technologies allow users to approach social networks more confidently and fearlessly [8]. Therefore, the code associated with blocks containing real information is an indication that subcribers can verify that the profile is authentic and trustworthy, allowing the social network to focus on its destination. Created as a company. Contact. The purpose of this research is to let anyone visit its real website and get trust tokens (code blocks) without any conditions or restrictions.

2. Research Method

The blockchain was invented in 2008 by a person (or group of people) named Satoshi Nakamoto to act as the public ledger for Bitcoin cryptocurrency transactions [9]. The identity of Satoshi Nakamoto is currently unknown. With the invention of the Bitcoin blockchain, Bitcoin became the first digital currency to solve the problem of double spending without the need for a trusted authority or central server. Bitcoin's design has inspired other applications, and publishable blockchains are commonly used in cryptocurrencies [10].

The blockchain is resistant to data changes. It is an open, verifiable and sustainable distributed ledger that can efficiently record transactions between two parties [11]. I used a distributed ledger. Peer-to-peer networks typically run on blockchains. Generic search for new blocks according to the communication protocol between nodes [12]. Once stored, the data in a given block cannot be changed back without changing all subsequent blocks. This requires the consent of most networks. Although blockchain records are not immutable, blockchains can be considered secure and represent distributed computing systems with a high degree of Byzantine fault tolerance. A blockchain consists of three basic elements. The first is a distributed ledger (like several versions) but centralized (like a single ledger), a way to record and store the links of individual social media accounts. This registry is public, readable and unmodifiable. In other words, no one can change what happened in the past.

The second factor is the consensus algorithm. This is how we ensure that all copies of the ledger are the same for everyone. This is often referred to as mining. A key feature of this system is that anyone can join. they are distributed. In other words, you don't need to trust any particular node on the compatible network. Unless all approvals are obtained, each process must be performed unanimously. In other words, all operations are managed. We do not accept modifications or procedures without permission. The third element, the encryption and distribution block, contains the data to be stored and the resulting hash indicating the location of the block and its contents, linking the block to the rest of the chain [13].
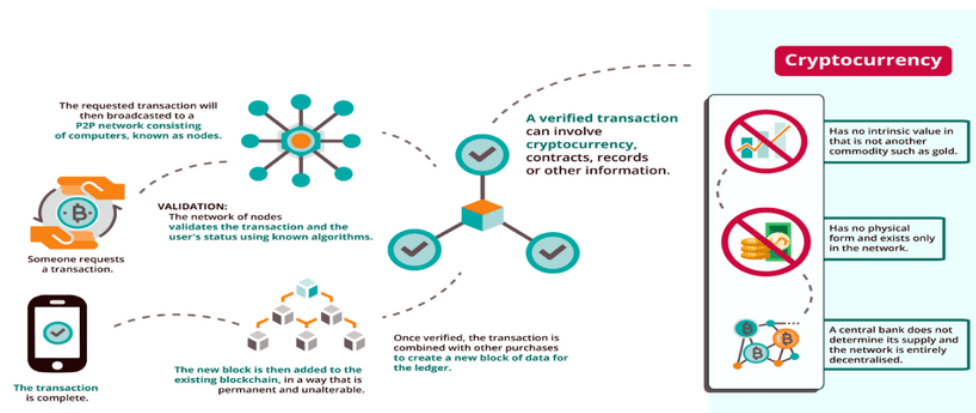
Figure 1: Blockchain mechanism.

Let's take a more in-depth look at what a block is in blockchain. Each blockchain block includes particular records. Hash of block and hash of preceding block. The records saved in every block relies upon the form of blockchain [14]. For example, blocks withinside the Bitcoin blockchain shape shop records approximately recipients, senders, and the variety of coins. A hash is sort of a fingerprint - an extended report of numbers and letters. Each block hash is generated using a cryptographic hash algorithm (SHA 256). Therefore, every block withinside the blockchain shape may be without problems identified. The hash is introduced routinely while the block is generated, however modifications made to the block have an effect on the hash change. Simply put, hash features assist discover block modifications. The closing detail of the block is the hash of the preceding block. It creates the blockchain and is a critical thing of the safety of the blockchain architecture. For example, block forty five factors to dam 46. The first block withinside the chain is special. All tested and tested blocks are derived from the Genesis block [15].

3. Result and Discussion

Let's take a closer look at what a block in a blockchain is. Each blockchain block consists of specific data. The hash of the block and the hash of the previous block. The data stored in each block depends on the type of blockchain [16]. For example, the blocks in the Bitcoin blockchain framework store data about the recipient, sender, and number of coins. A hash is like a fingerprint, a long record of numbers and letters. Each block hash is generated using a cryptographic hash algorithm (SHA 256) [17]. Therefore, each block in the blockchain structure can be easily identified. Hash functions are added automatically when blocks are generated, but changes to blocks affect hash changes [18]. Simply put, hash functions help detect block changes. The last element of the block is the hash of the previous block. This creates the blockchain and is an important part of the security of the blockchain architecture. For example, block 45 points to block 46. The first block in the chain is special. All validated and validated blocks are derived from the Genesis block [19].
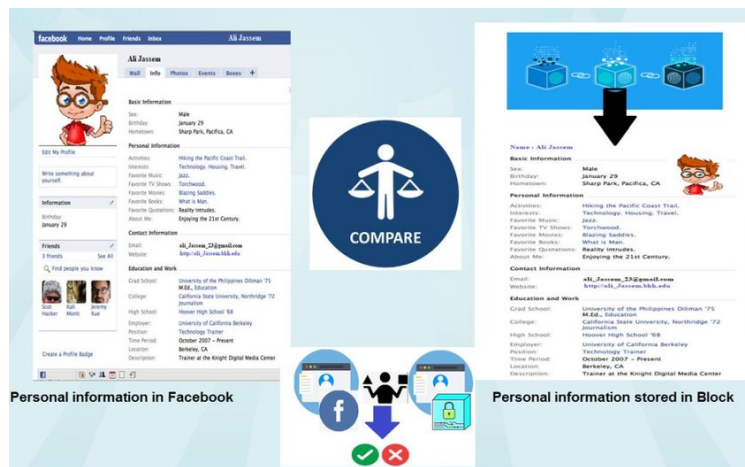
Figure 2. Personal Information

Ultimately, websites with links and blockchain trademarks may be depended on primarily based totally on the data allotted to all people at the block [20]. It's approximately bringing agreement to social media websites primarily based totally on the data you provide. This authorization is hard to forge, alter, or violate, as each technique jogging withinside the block notifies all people withinside the ee-e book to acquire authorization for his or her actions. In different words, this has a look that specializes in the opportunity of associating an unmarried account with an unmarried block. In the future, we might also additionally upload extra alternatives and the cap potential to hyperlink more than one bills to one in all our blocks [21].

This section describes several blockchain validation scenarios for social networking sites. Figure 3 shows the blockchain validation process, which begins with the creation of a block containing all personal information and ends with a hash code and account logo [22]. The procedure is simple, just the mechanism to generate blocks and link them to the personal account. Then, without waiting, you will get the trust logo. There is no way to opt out of the Trust Logos application unless someone tries to change personal information in bulk or use hash codes across multiple accounts [23]. If the hash is used by multiple accounts, the remaining blockchain subscribers will reject the activity and report the violation. This way, subscribers can recognize the manipulation or the fake page itself [24].
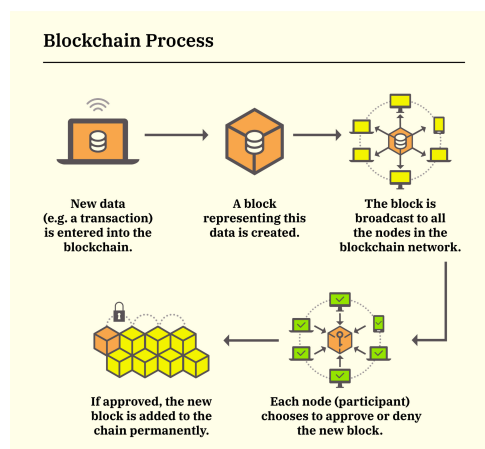

Figure 3. The sequence of the authentication process by blockchain

Due to its ease of use, success as an alternative to account holder authentication, and reduction of fake pages, we expect the number of pages recorded on the blockchain to increase. Anyone can easily compare the profile's hash with the block's private information. On the other hand, the proposed mechanism is efficient as it does not require documents such as official government documents to verify the identity of service seekers. The functionality of the social network should be limited to the social network, focusing on the purpose of the developed social network and the ability to record third-party personal pages [25].

In addition to hash code verification and the ability to match and block non-public data on the profile site, figure four shows the unlisted web page after receiving the hash and markup. This allows fans to visit their favorite character's website.

Figure 4. Personal page following the logo and hash code's appearance.

4. Conclusion

To replace authentication mechanisms in social networks and create a secure environment where all users can safely and reliably interact, this study provides a model of technical mechanisms. efficient algorithm suitable for blockchain electronic authentication. manufacturing. The proposed model calculates the trustworthiness of the blockchain. By distributing blocks of personal information stored across all registries, this model relies on building trust. This block is encrypted and cannot be modified or deleted. Therefore, it serves as a reference to verify the personal information stored in it and associated with the personal information of your social network accounts. Each subscriber can compare their block information with their account information using the hash displayed on their profile page. The account is authenticated if it matches, otherwise, it is false. The study not only highlights the potential of adding a third party to reduce the number of fake pages and create a secure environment, but also significantly contributes to the authentication of social media sites and social media users. . . Find and publish technical alternatives to reduce risk and highlight the need for social media validation.

A thorough technical review will be part of the future work. In addition, real-life scenario testing is performed. Once applied to social networking sites, the results are analyzed to find solutions to problems that may arise when using blockchain technology for authentication.

References

[1]   R. Widhawati, A. Khoirunisa, N. P. L. Santoso, and D. Apriliasari, "Secure System Medical Record with Blockchain System: Recchain Framework," in *2022 International Conference on Science and Technology (ICOSTECH)*, 2022, pp. 1–8.

[2]   T. C. Husnadi, T. Marianti, and T. Ramadhan, "Determination of shareholders' welfare with financing quality as a moderating variable," *APTISI Trans. Manag.*, vol. 6, no. 2, pp. 191–208, 2022.

[3]   B. P. K. Bintoro, N. Lutfiani, and D. Julianingsih, "Analysis of the Effect of Service Quality on Company Reputation on Purchase Decisions for Professional Recruitment Services," *APTISI Trans. Manag.*, vol. 7, no. 1, pp. 35–41, 2023.

[4]   R. Salam, H. Nusantoro, T. Ayuninggati, V. T. Devana, and A. P. Candra, "Peran Serta Dalam Melaksanakan Pembagian Makanan di Wilayah Bsd City," *ADI Pengabdi. Kpd. Masy.*, vol. 2, no. 1, pp. 62–66, 2021.

[5]   T. Ramadhan, Q. Aini, S. Santoso, A. Badrianto, and R. Supriati, "Analysis of the potential context of Blockchain on the usability of Gamification with Game-Based Learning," *Int. J. Cyber IT Serv. Manag.*, vol. 1, no. 1, pp. 84–100, 2021.

[6]   T. Ramadhan and R. D. Destiani, "Pengetahuan Manajemen Keuangan Bisnis Terhadap Niat Mahasiswa Bisnis Digital dalam Berwirausaha," *ADI Bisnis Digit. Interdisiplin J.*, vol. 3, no. 1, pp. 59–62, 2022.

[7]   S. Kosasi, S. Millah, and N. P. L. Santoso, "Manajemen dalam Konsep dan Prinsip Pengelolaan Pendidikan menggunakan Komputasi Awan," *J. MENTARI Manajemen, Pendidik. dan Teknol. Inf.*, vol. 1, no. 1, pp. 38–45, 2022.

[8]   Y. Durachman, A. S. Bein, E. P. Harahap, T. Ramadhan, and F. P. Oganda, "Technological and Islamic environments: Selection from Literature Review Resources," *Int. J. Cyber IT Serv. Manag.*, vol. 1, no. 1, pp. 37–47, 2021.

[9]   U. Rahardja, Q. Aini, F. P. Oganda, and V. T. Devana, "Secure Framework Based on Blockchain for E-Learning During COVID-19," in *2021 9th International Conference on Cyber and IT Service Management (CITSM)*, 2021, pp. 1–7.

[10]   R. Widayanti, Q. Aini, H. Haryani, N. Lutfiani, and D. Apriliasari, "Decentralized Electronic Vote Based on Blockchain P2P," in *2021 9th International Conference on Cyber and IT Service Management (CITSM)*, 2021, pp. 1–7.

[11]   N. Lutfiani, Q. Aini, U. Rahardja, L. Wijayanti, E. A. Nabila, and M. I. Ali, "Transformation of blockchain and opportunities for education 4.0," *Int. J. Educ. Learn.*, vol. 3, no. 3, pp. 222–231, 2021.

[12]   D. Apriani, T. Ramadhan, and E. Astriyani, "Kerja Lapangan Berbasis Website Untuk Sistem Informasi Manajemen Praktek (Studi Sistem Informasi Program Studi Kasus Merdeka Belajar Kampus Merdeka (MBKM) Universitas Raharja," *ADI Bisnis Digit. Interdisiplin J.*, vol. 3, no. 1, pp. 24–29, 2022.

[13]   Q. Aini, U. Rahardja, I. Handayani, M. Hardini, and A. Ali, "Utilization of google spreadsheets as activity information media at the official site alphabet incubator," *Proc. Int. Conf. Ind. Eng. Oper. Manag.*, no. 7, pp. 1330–1341, 2019.

[14]   D. Apriliasari and B. A. P. Seno, "Inovasi Pemanfaatan Blockchain dalam Meningkatkan Keamanan Kekayaan Intelektual Pendidikan," *J. MENTARI Manajemen, Pendidik. dan Teknol. Inf.*, vol. 1, no. 1, pp. 68–76, 2022.

[15]   I. U. Rahardja and S. Raharja, "Artificial informatics," *2009 4th IEEE Conf. Ind. Electron. Appl. ICIEA 2009*, pp. 3064–3067, 2009, doi: 10.1109/ICIEA.2009.5138764.

[16]   U. Rahardja, Q. Aini, and A. Khoirunisa, "The Effect of Rinfogroups as a Discussion Media in Student Learning Motivation," *Aptisi Trans. Manag.*, vol. 2, no. 1, pp. 79–88, 2018.

[17]   F. P. Oganda, "PEMANFAATAN SISTEM IJC (iLearning Journal Center) SEBAGAI MEDIA E-JOURNAL PADA PERGURUAN TINGGI DAN ASOSIASI," *CSRID*

(Computer Sci. Res. Its Dev. Journal), vol. 11, no. 1, pp. 23–33, 2020.

[18]　T. Wahyuningsih, F. P. Oganda, and M. Anggraeni, "Design and Implementation of Digital Education Resources Blockchain-Based Authentication System," *Blockchain Front. Technol.*, vol. 1, no. 01, pp. 74–86, 2021.

[19]　N. Septiani, N. Lutfiani, F. P. Oganda, R. Salam, and V. T. Devana, "Blockchain technology in the public sector by leveraging the triumvirate of security," in *2022 International Conference on Science and Technology (ICOSTECH)*, 2022, pp. 1–5.

[20]　K. Fitrah, M. Dalam, A. L. Qur, and D. A. N. Implikasinya, "Konsep fitrah manusia dalam al - qur'an dan implikasinya dalam pendidikan anak usia dini," pp. 1–12, 2016.

[21]　F. P. Oganda, M. Hardini, and T. Ramadhan, "Pengaruh Penggunaan kontrak cerdas pada Cyberpreneurship Sebagai Media Pemasaran dalam Dunia Bisnis," *ADI Bisnis Digit. Interdisiplin J.*, vol. 2, no. 1, pp. 55–64, 2021.

[22]　M. Azmi, M. S. Shihab, D. Rustiana, and D. P. Lazirkha, "The Effect Of Advertising, Sales Promotion, And Brand Image On Repurchasing Intention (Study On Shopee Users)," *IAIC Trans. Sustain. Digit. Innov.*, vol. 3, no. 2, pp. 76–85, 2022.

[23]　S. B. Goyal, E. P. Harahap, and N. A. Santoso, "Analysis of Financial Technology Implementation on The Quality Of Banking Services in Indonesia: SWOT Analysis," *IAIC Trans. Sustain. Digit. Innov.*, vol. 4, no. 1, pp. 77–82, 2022.

[24]　H. T. Sukmana, "Prototyping ITSDI Journal Center Menggunakan Tools Invision Untuk Mewujudkan Creative Innovation Soft Skill Di Era Industri 4.0," *ADI Bisnis Digit. Interdisiplin J.*, vol. 1, no. 1, pp. 56–69, 2020.

[25]　B. S. Riza, "Blockchain Dalam Pendidikan: Lapisan Logis di Bawahnya," *ADI Bisnis Digit. Interdisiplin J.*, vol. 1, no. 1, pp. 41–47, Jun. 2020, doi: 10.34306/abdi.v1i1.112.