
DATA TRUST FRAMEWORK USING BLOCKCHAIN TECHNOLOGY AND ADAPTIVE TRANSACTION VALIDATION

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ABSTRACT

Trust is the main barrier preventing widespread data sharing. The lack of transparent infrastructures for implementing data trust prevents many data owners from sharing their data and concerns data users regarding the quality of the shared data. Data trust is a paradigm that facilitates data sharing by forcing data users to be transparent about the process of sharing and reusing data. Blockchain technology proposes a distributed and transparent administration by employing multiple parties to maintain consensus on an immutable ledger. This paper presents an end-to-end framework for data trust to enhance trustworthy data sharing utilizing blockchain technology. The framework promotes data quality by assessing input data sets, effectively manages access control, and presents data provenance and activity monitoring. We introduce an assessment model that includes reputation, endorsement, and condence factors to evaluate data quality.

We also suggest an adaptive solution to determine the number of transaction validators based on the computed trust value. The proposed data trust framework addresses both data owners' and data users' concerns by ensuring the trustworthiness and quality of the data at origin and ethical and secure usage of the data at the end. A comprehensive experimental study indicates the presented system effectively handles a large number of transactions with low latency.

1 INTRODUCTION

Data sharing has become a big concern regarding privacy and confidential issues, abusing data, and legal and ethical violations. The lack of a transparent and trustworthy framework for data trust hinders many data owners from sharing their data, which could be vital for many research purposes. Data sharing is not merely a big concern for data owners, but also data users are concerned about the trustworthiness and reliability of the provided data at the origin. Hence, trust is a two-way problem for both data owners and data users. Data trust is a fairly new concept that aims to facilitate data sharing by forcing data users to be transparent about the process of sharing and reusing data. Data trust entails legal, ethical, governance and organizational structure as well as technical

requirements for enabling data sharing. Previous studies have suggested the potential of web observatory [1] and institutional repositories [2] for implementing data trust. Block chain technology has salient potential to effectively present the essential properties for creating a practical data trust framework by transforming current auditing practices and automatic enforcement of smart contracts logic, without relying on intermediaries to establish trust. Many other studies have investigated block chain potential for data sharing, establishing trust and access control. However, those are mostly scattered studies that have focused on a particular step or specific aspect in data sharing or have taken one side of the parties in data sharing by addressing only data owners' concerns.

2 RELEATED WORK

The primary approach to project development is to construct a mail-enabled platform for a small business. This platform should include an address book, search engine, and engaging games in addition to making sending and receiving messages simple and convenient. When it is accepted by the company and our project manager, the first action, or preliminary inquiry, starts. An evaluation of the financial case for a computer-based project is known as economic feasibility or cost benefit analysis. The hardware project had a cheap cost because hardware was installed from the start and served many tasks. Any number of employees linked to the organization's local area network (LAN) can utilize this tool at any time because it is network-based. The organization's current resources will be used to construct the virtual private network. Therefore, the proposal is financially viable the computer's output is needed mostly to establish an effective channel of communication within the organization, especially between the project manager and his team—that is, between the administrator and the clients. The system that the VPN produces enables the project manager to oversee his clients by adding new ones, assigning them new projects, keeping track of the projects' validity, and granting each client user-level access to folders based on the projects assigned to them. The client may be given a new project to work on after one has been completed.

3 implementation study

Existing System:

Shala *et al.* [22] introduced an incentive mechanism to motivate low trusted peers in the IoT network to increase their trust score. The incentivization system uses control loops that contain a target trust score. For the service providers with low trust scores, a package of incentives, such as discounts for other services, will be sent to encourage them to offer a better service in exchange for the promised benefits. In [12], authors presented an incentive-based model to encourage medical data owners to share their high-quality data (real and practical) and earn revenues, as well as miners who get benefit by participation and validating transactions.

- The system is less secured since blockchain techniques which are maintains trust between data are not implemented.
- Trust is not implemented in which a multidisciplinary and multifaceted concept that has been defined in various disciplines, such as sociology, economics, psychology, computation, information and computer science, to model different types of relationships.

3.2. PROPOSED SYSTEM

In the proposed system, the system proposes an end-to-end framework for data trust based on blockchain, which ensures the trustworthiness and quality of the data at origin for data users and ethical and secure usage of data for data owners. First, we introduce a trust model to assess input data sets' trustworthiness using three parameters: data owner endorsement and reputation, data asset endorsement and data owner confidence level in the provided data set. All these parameters are recorded on the ledger, and they will be updated with every new transaction.

4.1 Advantages:

- Discovery refers to the process of discovering the quality and properties of data-by-data users in the first place.
- Provenance refers to the ability of data users to access the historical record and metadata about the data
- Access control refers to the ability of data owners to control and manage access permissions toward their data