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A Review of Blockchain Technology Based Techniques to Preserve Privacy and to Secure for Electronic Health Records

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Abstract

Research has been done to broaden the block chain's use cases outside of finance since Bitcoin introduced it. One sector where block chain is anticipated to have a big influence is healthcare. Researchers and practitioners in health informatics constantly struggle to keep up with the advancement of this field's new but quickly expanding body of research. This paper provides a thorough analysis of recent studies looking into the application of block chain-based technology within the healthcare sector. Electronic health records (EHRs) are becoming a crucial tool for health care practitioners in achieving these objectives and providing high-quality treatment. Technology and regulatory barriers, such as concerns about results and privacy issues, make it difficult to use these technologies. Despite the fact that a variety of efforts have been introduced to focus on the specific privacy and security needs of future applications with functional parameters, there is still a need for research into the application, security and privacy complexities, and requirements of block chain-based healthcare applications, as well as possible security threats and countermeasures. The primary objective of this article is to determine how to safeguard electronic health records (EHRs) using block chain technology in healthcare applications. It discusses contemporary Hyperledger fabrics techniques, Interplanar file storage systems with block chain capabilities, privacy preservation techniques for EHRs, and recommender systems.

Keywords: *Electronic Health Records, block chain, recommender system, privacy, file storage*

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Integrated Internet of Things with cloud developed for data integrity problems on supply chain management

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ABSTRACT

It is indeed an effort to ensure integrity of data for cloudbased Internet of Things (IoT) applications because of the inherently dynamic nature of IoT data. It is challenging to discover the integrity and authenticity of various sorts of transactions in the cloud environment as the amount of supply chain transactions grows. On massive supply chain management (SCM) data, the majority of conventional supply chain management methods or methodologies have become increasingly sophisticated. Also, the conventional integrity computation methods like the SHA family, MD5, Whirlpool, linear chaotic, etc ... mostly rely on fixed random parameters with constrained hash and data sizes. To optimize these problems on the cloud-based supply chain databases, a hybrid integrity verification-based encoding and decoding technique is proposed. By interactively authenticating blockchains, the proposed method reduces IoT data integrity problems and strengthens the function of intermediary media serving as gateways. Experimental results showed that, in terms of integrity bit change, runtime, and encoding average runtime, the optimized supply chain data integrity model outperformed the traditional techniques.

1. Introduction

The word “cloud” in cloud computing is derived from the Internet cloud symbol and is used synonymously with “data centre.” Because of the rapid improvements in computer science and information technology over the last several decades, users who previously used traditional computing methods are now switching to cloud computing. The widespread use of broadband and the availability of the Internet are examples of development. The usage of cloud is growing as a result of advancements in Internet research, the advent of powerful servers, and storage technology that is utilized to store large amounts of data. Due to the utility computing idea, these developments result in scalable software architecture with excellent performance for the data centres and supply chain applications leveraging the cloud. Cloud computing is a technology that offers a dynamically scalable infrastructure for storing data and running applications by connecting a large pool of systems and resources in a group through quick communication connections. In this case, the pool is set up such that only proven and reliable technologies are used on the pool’s participants [1]. The creation of blockchain to support the sharing of services and smart contracts has been the subject of recent investigations. In particular, the implementation of blockchain

in IoT systems not only helps to increase user confidence in IoT systems but also promotes the IoT sharing economy via apps.

A technique known as cloud computing allows one server or a group of servers to perform computer tasks on behalf of other servers that are spread out across different locations and linked to the Internet. Any technology may be used remotely on the cloud without having to install it on your computer, and you’ll never have to pay for it if you don’t use it. The cloud may be thought of as a very large distributed system that hosts a variety of services and makes them available to every single user in the globe through the Internet. These services are used to host a variety of applications at different data centres that are equipped with the necessary hardware and operating system software [2]. IaaS, PaaS, and SaaS are the three main forms of cloud computing that are defined by CSA in the security advice report. IaaS offers users like Amazon EC2 [3] computing infrastructure that includes a CPU for executing any application, storage space for raw data, and networking. PaaS, or platform as a service, offers a computing environment that aids in the creation, testing, and deployment of an application using hardware and software that is readily available to developers at very low cost and relieves them of the need to buy and maintain the hardware and software, such as Google App Engine. Support is provided for all procedures necessary for

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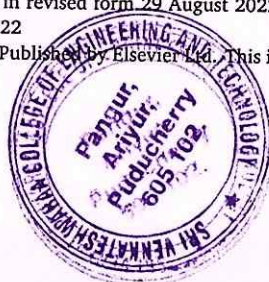
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An ensemble model for idioms and literal text classification using knowledge-enabled BERT in deep learning

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ABSTRACT

Literal and metaphorical meanings can both be found in language as a system of communication. The literal sense is not difficult, but the figurative sense includes ideas like metaphors, similes, proverbs, and idioms to create a distinctive impact or imaginative description. Idioms are phrases whose meaning differs from that of the words that make up the phrase. Due to its non-compositional character, idiom detection in NLP tasks like text categorization is a significant difficulty. Inaccurate idiom recognition has reduced the model's performance in one of the crucial text categorization tasks, such as cyberbullying and sentiment analysis. Using language representation models that have already been trained, such as BERT (Bidirectional Encoder Representation from Transformer) and RoBERTa, the current system categorises the phrases as literals or idioms (Robustly Optimised BERT Pretraining Approach). The current system performs more accurately than the baseline models. We propose a method for categorising idioms and literals is developed utilizing K-BERT (Knowledge-enabled BERT), a Deep Learning algorithm that injects knowledge-graphs (KGs) into the sentences as domain knowledge. Additionally, it will be ensembled utilizing the stacking ensemble approach with baseline models like BERT and RoBERTa. Trofi Metaphor dataset was utilised in this study for the model's training, while a brand-new internal dataset was used for testing.

1. Introduction

All natural languages and text genres utilise idioms often, yet idiomatic expressions continue to be a strange linguistic phenomena because of their complicated traits, including discontinuity, non-compositionality, heterogeneity, and syntactic flexibility [1]. Similar to automated idiomatic expression recognition, which is challenging yet necessary for several applications of natural language processing including sentiment analysis and machine translation [2]. Additionally, idioms are challenging to extract since there is no method that can exactly describe an idiom's structure [3]. The fact that idiomatic phrases are an open collection and that new ones might always appear makes the process considerably more difficult. This makes it practically impossible to compile an entire collection of idiomatic idioms for every language [4].

Literal refers to a phrase or sentence's fundamental or precise meaning. It doesn't communicate any metaphorical or figurative connotation. It conveys the reality and has a propensity to interpret words literally or unimaginatively [5]. He is so literal that he is

incapable of understanding our humour. Idioms are phrases whose overall meaning differs from the meaning of a word that make them up. The literal meaning of the constituent words in a phrase are less significant in colloquial phrases and are completely overshadowed by the meaning of the overall word sequence [6]. Idioms therefore contain two components: a sense as a whole and a collection of individual terms. To "kick the bucket" is an idiomatic word that signifies to pass away [7].

Texts regularly use terms like metaphors and idioms that don't have a literal meaning [8]. When it relates to translation, idioms, which are roughly defined as words or expressions with metaphorical as opposed to literal meanings, can present several difficulties. Natural language processing is greatly hampered by the peculiar lexical and syntactic features of non-literal statements [9,10]. The majority of idiom extraction methods perform poorly because they are biased toward one particular domain or just employ statistical methods. Therefore, this work uses deep learning approaches to classify idioms and literals, which aids in improved categorization [11].

Our major contributions:

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Blockchain Enabled Supply Chain using Machine Learning for Secure Cargo Tracking

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Abstract: Blockchain (BC) technology is becoming popular in the current trend search. In case of high security, it enables the decentralized network and anyone can interact with each other without intermediate lack of security. Globally, a considerable amount of commercial goods are transferred. The challenge in modern society is how to successfully transport cargo to safe destinations. The transport of imports is carried out based on the monitoring from the origin to the end, which makes it difficult to report the condition of the product and the quantity discrepancies in the existing system. To accomplish efficient crypto freight transportation, the proposed Mask Recurrent Convolutional Neural Network and Merkle Tree (MRCNN-MT) method in Supply Chain Management (SCM) address the problems in the existing system with a constant surveillance organization and decentralized product retention. Machine Learning (ML) is included in solving the problems faced by BC Technology in this cyber world. ML and Blockchain (BC) technology together have the potential to deliver very effective and beneficial results. The blink application is used to produce warning messages, and continuous monitoring to produce higher performance with the minimal human intrusion. Create secure folders in suspicious products using SCM in the proposed system. Information is secured by encryption using decentralized applications when running programs using synchronized registry entries to preserve network storage.

Keywords: BC Technology, Supply Chain Management, Cargo Tracking System, Mask RCNN, Smart Contract, Object and bar code detection

1. Introduction

BC is an evolving technology for electronic data storage across numerous systems. The register component of BC, which would be comparable to a relational database, is among the utmost crucial components. BC is a database of secured electronic transfers of documents. To use a cryptographic signature, the transaction in the BC and the final transaction were created and distributed. Every transaction is "chained" to the following transaction sequentially or historically [1]. The BC is connected to every user of the system's equipment who uses them to verify transactions and deny unauthorized parties data access.

With the eradication of centralized implementations and decentralized systems, BC is being used to disseminate and prevent unauthorized access in a novel method. The BC cannot be upgraded by system contributors and the host through consent [2]. The transfer cannot be changed or removed at any time. Information that is dispersed rather than centralized can sometimes be hijacked or altered comparably.

Every transaction is rapidly expanding the BC system usually includes the cryptographic coding of the chain before it is connected and safeguarded via encryption, making activities

irreversible. The worldwide knowledge of BC technology exists in public archives, decentralized information systems, information security, openness, and authenticity; strong robustness with reduced deployable individualities that improve practicality; and genuine capabilities [3].

An SCM is a relationship between a business and its providers to produce and distribute a particular item. It depicts the processes necessary to provide a good or service to the client as shown in Fig. 1. Since a distribution system that is structured benefits in better prices and a quicker manufacturing method, SCM is an important procedure [4]. It plays a crucial role in the society of tangible commodities to live in today. Businesses keep a lot of time, cost, and attention into maintaining and improving systems, and this is unlikely always to cease. Especially for a firm that utilizes several components, an organizational system for supply chains can decrease the rate and complication of the production progression [5].

1. A maker of garments will initially put crude ingredients into manufacturing.
2. The producer then spends money on labor to operate equipment and carry out other tasks while employing the supplies.
3. When the products were finished should be packaged and kept unless a consumer buys them.

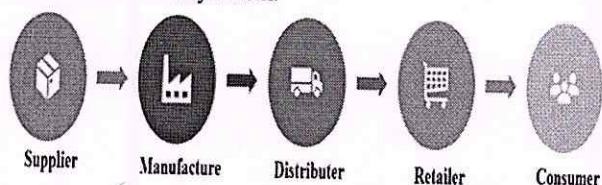


Fig. 1. Supply Chain Management

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RESEARCH ARTICLE

Thyroid Detection and Classification Using DNN Based on Hybrid Meta-Heuristic and LSTM Technique

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ABSTRACT In the field of medical research, prediction, as well as diagnosis of thyroid disease, is a major cause that is a challenging onset axiom. In metabolism regulation, thyroid hormone secretions play a significant role. Two frequent thyroid diseases are hypothyroidism and hyperthyroidism that release the hormones like the thyroid, which regulate the body's metabolism rate. For analytics, the approach of data cleansing is utilized to analyze enough primitive data, which demonstrates the patients' risk. Deep Neural Networks (DNN) is the most vital as well as efficient technology, which predict the disorder of thyroid. To avoid the errors of human, the evaluation of manual process consumes expertise domain as well as time. To detect disease, a novel Long Short-Term Memory based Convolution Neural Network (LSTM-CNN) is utilized with occurrence area Vgg-19. For selecting the feature, the approach of bias field correction is integrated with the hybrid optimization technique i.e., Black Widow Optimization as well as Mayfly Optimization Approach (HBWO-MOA), also for classifying the disease the LSTM as well as Vgg-19 of Deep Learning (DL) is presented. From DDTI dataset image of ultrasound, the disease of thyroid prediction as well as classification is efficiency. This analysis shown that the proposed technology is accurate than the convolutional methodology. When compared to existing prediction techniques i.e., AlexNet-LSTM, ResNet-LSTM, Vgg16-LSTM, the proposed approach of Vgg-19-LSTM's precision, sensitivity, accuracy, recalls as well as F1_score is effective.

INDEX TERMS Classification, HMOA-BWO, LSTM, pre-processing, segmentation, Vgg-19.

I. INTRODUCTION

In the industry of healthcare, computational biology advances are being utilized for storing the collection of patient's data, which predict the medical diseases. A variety of techniques are accessible for early disease diagnosis. For analyzing the disease, the intelligent applications i.e., the information of medical technology are not accessible to collect the required sets of data [1], [2]. However, in recent days there is a

technology named as Machine Learning (ML) optimization, which plays a vital contribution for predicting & solving non-linear as well as complex issues. The features that can be chosen in any approach of disease detection, which classify easily in healthy persons, are emphasized as much as possible from multiple datasets. Instead, a healthy person may be exposed to unnecessary treatment because of misidentification. As a result, the accuracy of prediction any diseases along with thyroid is highest concern [3], [4], [5], [6].

In the neck, an endocrine gland is also known as the thyroid gland. It grows beneath the Adam's apple in the lower

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