

Tender Clearance and Settlement using Blockchain

Priyanka Rebello

Dept. of Master of Computer Application,
P.E.S College of Engineering, Mandy,
Karnataka, India

H.L Shilpa, Asst. Professor

Dept. of Master of Computer Application,
P.E.S College of Engineering, Mandy,
Karnataka, India

Abstract— Tender is a process of inviting bids for large project by Government, Private sectors. In the present system, the tendering process with respect to tender allocation is tedious task, So it is a delayed process and chances of third-party interfere (broker). Blockchain generation is one of the solutions that allow blanketed structures without a third celebration because it adheres to the decentralized nature of allotted databases. Hence we are proposing a easy model of handing tender application which stores bidders data in blocks of files using blockchain approach. and mainly focus on clearing and settlement of tenders. It allocate tenders to bidders and tender approval schema by machine learning process based on the Artificial Intelligence.

Keywords—Artificial Intelligence, Bid, Blockchain, Clearance, Settlement, Tender.

I. INTRODUCTION

Blockchain (BC) has received huge attention due to its distributed and extensively relaxed nature, and its capability for economic applications. Tender is a method of inviting bids for big undertaking via Government, Private sectors or exchange is a formal provide to supply gadgets or to do a specific hobby such as takeover bid. Clearing include, manipulate of publish-tendering, pre-agreement accordance with marketplace recommendations. A clearinghouse: refers tender clearing or settlement services for stocks, and other financial products. The clean allocation of open tender is tedious project and budget on the premise of labor finished is tough to control and the tender clearance device is very sluggish in present day.

The scope of this proposed system is to demonstrate the Blockchain technology is one of the solutions that allow included structures without a 3rd party (broker) as it adheres to the decentralized nature of allocated databases in order that it has a reproduction of many bidders. By adopting blockchain to clearance and settlement of tenders. Blockchain can lessen the supply of fraud, specifically database manipulation.

The purpose of Tender Clearance and Settlement using block chain to avoid the third-party interfere (brokerage) of tender allocation (favouritism). To avoid the corruption by secure clearance and settlement of tender. To notify tender call to the bidders and to secure the tender documents and information in distributed manner.

II. LITERATURE SURVEY

The basic perform of system is to accessible the tender Documents On-line to the purchasers and transfer the applying forms. Daily several tenders are going to be free and therefore the new tenders are updated so customers will read them and if they're interested they'll transfer the tender

type. The tender documents are going to be provided to the user. This technique may also handle multiple tender documents at just once i.e. the user will access varied tenders from the corporate at former and might transfer the specified forms. The user will submit the main points together with quotation to the department through on-line. Then the department folks appraise all the tenders submitted by users on analysis date and that they allot that employment to the user UN agency is eligible and quoted for fewer quantity [1].

The model may be a new abstract model of totally machine-controlled, digital and web-based tendering answer that's covering all steps of the tendering method and involving all connected division system modules and stakeholders. The model will be thought of as a base for building a brand new framework for the event of associate degree applicable e-Tendering system that's totally automating the tendering method in any enterprise's Tendering Management System (TMS) [2].

A tender is a regulated process through which an organization publicly discloses a contract, requests offers that satisfy it, evaluated these offers and selects one of them based on defined criteria. This article establishes the necessary requirements in a secure tendering protocol, a proposal is performed using cryptographic primitives and the protocol is verified if it complies correctly with the security functions through an implementation in Maple mathematical software. The main objective is to maintain the integrity, authentication, non-repudiation and confidentiality of the documents involved as appropriate [3].

The Chinese government smartly enforced the surgical procedure (Public- non-public Partnership) surgical procedure comes, associate degree biological process game model was made to debate the individual biological process stable methods, and to get the dynamic replication part diagram. Consistent with the analysis of the sport behavior selections between them, the corresponding suggestions like increasing the penalty intensity of rent-seeking, taking effective suggests that of direction and reducing direction price were suggests. It provides scientific basis for the direction of the surgical procedure project tender [4].

Clearing and settlement method in Asian nation (case of NSE) is victimization National Securities Clearing Corporation (NSCCL) for its operating. The settlement time taken for completion of settlement is 2 operating days from the mercantilism day. The work develops a model of clearing and settlement (in NSE) victimization blockchain. The model minimizes the settlement time from 2 days to a couple of minutes. The projected model has distributed ledger that uses sensible go for its operating and simply

transfer's knowledge throughout all the members' gift in network. The quick transfer of knowledge between totally different entities reduces the settlement time [5].

Clients should enlist themselves and will get a lasting client ID and secret word. By this ID and secret word he can download the delicate structures in future moreover. This deal with numerous delicate reports at just once i.e. the shopper will get to totally different tenders from the organization at just once and might transfer the specified structures. At that time the workplace people assess all of the tenders place along by purchasers on assessment date and that they allot that employment to the shopper UN agency is qualified and cited for fewer total [6].

Public procure in Tanzania may be a terribly ineffective exercise resulting in inflated prices, corruption and delays in completion of Public comes. This paper analyses however Innovation will be employed in Public procure to confirm true fairness, aggressiveness, transparency and worth for cash publicly comes. This paper describes the general procure Management practices employed in Tanzania, the challenges, however the procure method affects public comes, however e-evaluation as a element of e-procurement will cut back Time and price of Public comes and at last the Project arrange associate degreed scope for the implementation of an economical e-tendering system [7].

In the present gadget, the open tender called both offline and online in which people are unaware approximately it. Generally tenders are known as within the nationalized newspaper, websites where the tender for different purposes are called upon. Tender desire technique is still manually based on the bidder and the gentle facts isn't always saved securely. Work order advent is finished based totally mostly on the lowest bidder.. Tender allocation is a tedious task and it needs hundred files to check previous work history. Following are the some of the survey outcomes.

- Favouritism.
- Corruption
- No replication of information due to centralized system
- High Competition
- Tender information less secure.
- No notification of new tender call to bidders.
- Maintaining data of a particular bidder is difficult.

III. PROPOSED SYSTEM

In the proposed System Tender Clearance and Settlement using Blockchain notify tender call to the registered bidders, basically tender called upon newspaper and websites. Bidders can file tenders based on the notifications published on the newspaper and websites. Once bidder registered to our proposed system, the bidders facts is saved within the server with the aid of encryption of the blocks of documents it use blockchain technique. To provide Easy clearance of tenders and secure settlement of tenders to bidders. Tender approval schema by machine learning process based on the Artificial Intelligence. These are the advantages of proposed system:

- High Competition but No Favoritism.
- Secured Clearance and settlement.
- Replica of tender information.

- Notification of all new tender to bidders.
- Automatic tender allocation based on previous work done using artificial Intelligence

IV. IMPLEMENTATION AND WORKING

The best method for gaining control while implanting any new system would be to use well planned test for testing all created on the old system. Before production files are used to test data, text files must be created on the old system, copied over to the new system, and for the initial test of each program. The best method for gaining control while implanting planned test files must be created on the old system, to implement new software from the zero level and level flow concept can planed and then we have to collect the requirements then we start the implementing phase.

A. Blockchain

The block chain is an open, decentralized, allotted and public digital ledger wherein transactions are recorded amongst human beings throughout many computers in order that the file can't be altered retroactively without alteration of all next blocks and the Consensus of the community. Block chain is taken into consideration a developing chain of facts connected with the useful resource of the electricity of cryptography.

B. MD5 Algorithm

MD5 (Message-Digest Algorithm) could be a cryptologic hash operate whose main purpose is to verify that a file has been in-situ. The MD5 rule could be a wide used hash operate manufacturing a 128-bit hash worth. Though MD5 was at the start designed to be used as a cryptologic hash operate, it's been found to suffer from in depth vulnerabilities. It will still be used as a verification to verify knowledge integrity, however solely against unintentional corruption. The MD5 operate could be a cryptologic rule that takes Associate in Nursing input of arbitrary length and produces a message digest that's 128 bits long. The digest is usually conjointly known as the "hash" or "fingerprint" of the input. MD5 is employed in several things wherever a probably long message has to be processed and/or compared quickly. The foremost common application is that the creation and verification of digital signatures.

MD5 Working:

Preparing the input:

The MD5 rule initial divides the input in blocks of 512 bits every. Sixty four Bits are inserted at the tip of the last block. These sixty four bits are accustomed record the length of the initial input. If the last block is a smaller amount than 512 bits, some further bits are 'padded' to the tip. Next, every block is split into sixteen words of thirty two bits every. These are denoted as M0 ... M15.

MD5 helper functions:

1. The buffer

MD5 uses a buffer that's created from four words that are every thirty two bits long. These words are known as A, B, C and D. they're initialized as.

2. The table

MD5 additional uses a table K that has sixty four components. Component range is indicated as K_i . The table is computed beforehand to hurry up the computations. The weather are computed mistreatment the mathematical sin function:

3. Four auxiliary functions

In addition MD5 uses four auxiliary functions that every take as input 3 32-bit words and turn out as output one 32-bit word. Apply logical operators and, or, not and xor to the input bits.

4. Processing the blocks

The contents of the four buffers (A, B, C and D) are currently mixed with the words of the input, mistreatment the four auxiliary functions (F, G, H and I). There are four rounds, every involves sixteen basic operations.

5. The output

The buffers A, B, C and D contain the MD5 digest original input.

C. Neural Network

A neural network could be a network OR circuit of neurons, or during a trendy sense, a man-made neural network, composed of artificial neurons or nodes. So a neural network is either a network, created from real biological neurons, or a man-made neural network, for determination computing (AI) issues. The connections of the biological somatic cell are sculptural as weights. A positive weight reflects Associate in nursing excitant association, whereas negative values mean restrictive connections. All inputs are changed by a weight and summed. This activity is named as a linear combination. Finally, Associate in Nursing activation operate controls the amplitude of the output. For instance, a suitable vary of output is typically between zero and one, or it may be may be one.

D. SVM Algorithm

(Support Vector Machine) is a supervised machine learning model used for classification or regression. It uses a method known as the kernel trick to rework your knowledge then supported these transformations it finds Associate in nursing best boundary between the attainable outputs. SVM is gaining data of set of rules which might be used for every beauty or regression gainsays. However, its miles significantly applied in a similar way issues. Within the SVM set of rules, we have a tendency to plot every records item as a facet in n-dimensional locality (wherein n is style of competencies you've got) with the charge of each operate being the value of a particular coordinate. Then, we have a tendency to perform beauty with the help of finding the hyper-plane that differentiates the 2 coaching okay.

SVM Algorithm Steps:

- Step 1: SVM created by renowned coaching knowledge.
- Step 2: Produce the point knowledge.
- Step 3: The output worth of SVM of the point knowledge and trained knowledge are compared.
- Step 4: The value is computed with trained data
- Step 5: The output of the projected SVM is additionally

computed with trained knowledge.

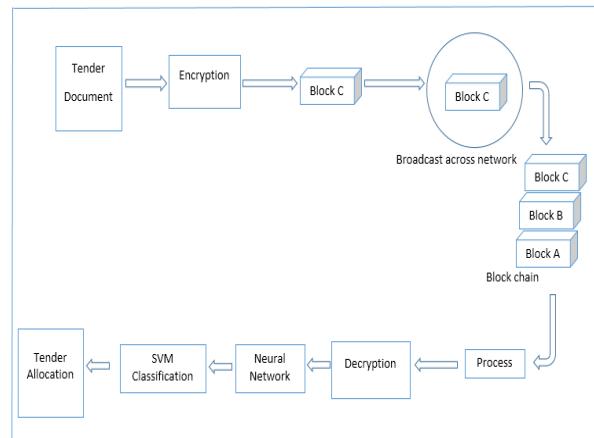


Fig. 1. System Architecture

Fig 1 shows system architecture of the proposed system. Bidder bid the tenders called by the officers, each bidder's tender documents are stored in separate blocks using encryption mechanism. Tender documents stored in blocks are broadcast across the network to create a chain. Block C broadcast across the network (Block A, Block B) to create a chain-link also called Blockchain. Tender approval schema by machine learning process based on the Artificial Intelligence. When admin process the particular tender called by officers, each blocks that stores tender bidding document get decrypt. Then perform neural network to separate the total number of bids by the bidders and apply SVM algorithm to perform classification, it allocated tender to bidders based on tender data given bidders while bidding with the tender data given by the officers.

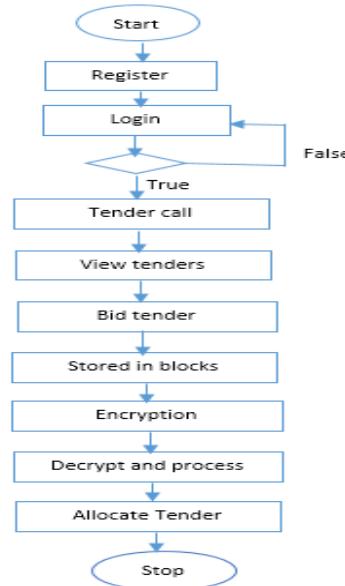


Fig. 2. Flow Chart of the System

V. EXPERIMENTAL RESULT

The performance of proposed tendering system is working well. It uses block chain technology and it allocate tenders using SVM machine learning algorithm which compare nearest bidder, schedule, cost, number of time bids based on the tender data given by bidders with the tender data given by officer and produce accurate result. Our proposed system providing high transparency for tendering.

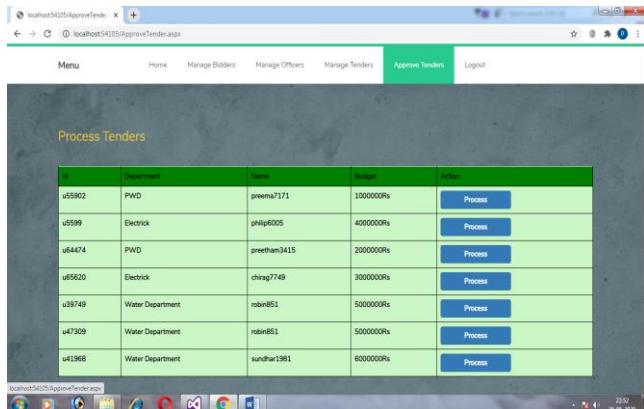


Fig. 3. Tender Processing Page

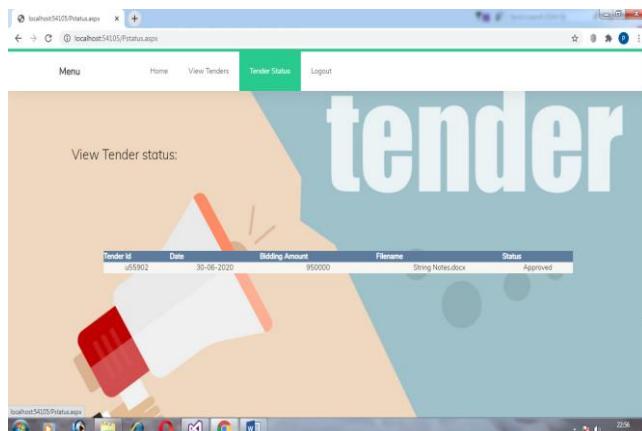


Fig. 4. Tender Approved to bidder using AI Page

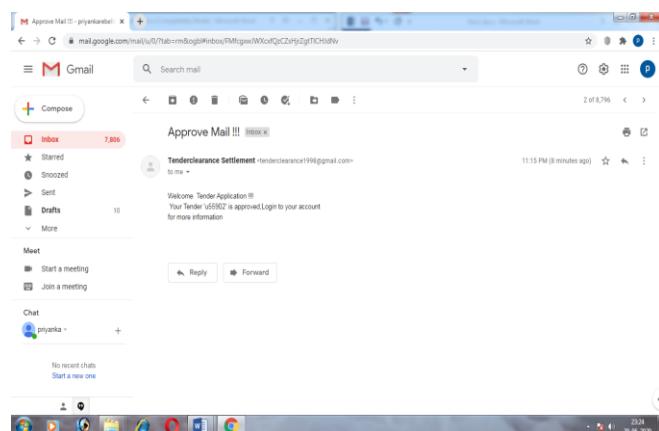


Fig. 5. Tender Approved Mail to bidder

Fig 3 shows Admin process the particular tender called by officers. Tender approved to the bidder as shown in Fig

4. Also send tender approved mail to the bidder with the tender id as shown in Fig 5. This tender approval schema by machine learning process based on the Artificial Intelligence.

VI. CONCLUSION

The proposed system providing a good and secure platform for tendering using block chain technique. Which provide easy clearance and secure settlement of tenders to the bidder and stores bidder data within the server with the aid of encryption of the blocks of documents that uses blockchain technique which is distributed in nature. So that it avoid the corruption and favoritism of allocating tender by using Artificial Intelligence. Hence we are providing a smooth version of handling smooth application for secure clearance and Settlement of the tenders using blockchain. In the future it can be extended in two versions. Firstly offering more authorities which is another three types of tenders, selective tender, Negotiated tender, single-stage and two-stage tender on blockchain to boom openness and transparency. Secondly we can improve tender settlement platform which is financial settlement and product settlement, blockchain helps to open more transparent in financial settlement that can be a proper and nicely timed transfer of finances or cash flow for work. Also helps in end to end product settlement which means complete product exchange between officer and bidders, which also helps to allocate tender based on previous work.

REFERENCES

- [1] C., Priya, and K., Ramamoorthy. "Online Tendering System", International Journal of Scientific Research and Modern Education (IJSRME) ISSN (Online): 2455 – 5630 (www.rdmmodernresearch.com) Volume I, Issue I, 2016 543
- [2] Abdallah, Qusef, Mohammad, Dradkah, George, Sammour, and Alaa, Albadarnch. "A New e-Tendering Model For Fully Automated Tendering Process" 2019 IEEE international Arab Conference on Information Technology (ACIT)
- [3] Alvaro, Zaval, Leonel, Maye, Christian, Pleitez and Marvin, Guillen. "Secure cryptographic protocol applied to the process of public tendering for contracting services" 2019 IEEE 39th Central America and Panama Convention (CONCAPAN XXXIX)
- [4] Na, Li, And Chao, Ma. "Evolutionary Game Analysis on Supervision Of PPP Project Tender" 978-1-5386-1329-0/18/\$31.00 ©2018 IEEE
- [5] Surya, Ann, Thomas. "Application of Blockchain in Clearing and Settlement: A Case Study of NSE International Journal of Research and Scientific Innovation (IJSRI)" | Volume V, Issue VII, July 2018 | ISSN 2321–2705
- [6] V, Sundeep, Kumar, and N, K, Dinakar. "Tender Management System for Public Work Departments" International Journal of Scientific Research in Computer Science, Engineering and Information Technology © 2018 IJSRCSEIT | Volume 4 | Issue 2 | ISSN : 2456-3307
- [7] Amani, Dello, and Dr., ChikaYoshida. "Online Tendering and Evaluation for Public Procurement in Tanzania" 978-1-5090-5504-3/17/\$31.00 ©2017 IEEE SNP 2017, June 26-28, 2017, Kanazawa, Japan