

A Blockchain Framework for Insurance Processes in Hospitals

B. Lakshma Reddy, A. Karthik, S. Prayla Shyry

Abstract--- The Blockchain enabled system is to analyse, the best process of the treatment for a particular disease and also the system determines if any fraudulent activity has been controlled by the doctor. The system also recommends the most appropriate treatment process to perform for a particular disease in view of the movement of the previous patient. Here the system is creating Block chain enabled framework for diseases and in this the system will create disease as a unique key point and suggesting a better treatment to the hospitals. The basic objective of the project is to suggest a best treatment to the hospitals.

Keywords--- Blockchain, Hospital, Insurance, Treatment.

I. INTRODUCTION

A distributed platform with blockchain as an framework service for uploading dealing execution in insurance processes. The insurance trade is heavily relying on multiple methods between transacting parties for initiating, maintaining and shutting numerous quite policies. Transaction time interval, payment settlement time and security protection of the method execution square measure major issues. Blockchain technology, originally advanced as an immutable delivered ledger for finding double spending of crypto currencies, is now increasingly used in different Financial Technology systems to address productivity and security requirements. Thus, the paper targets on the design of a powerful access for processing insurance associated transactions based on a blockchain-enabled platform. An experimental example is refined on Hyperledger fabric, an source approved blockchain design framework. Here we mainly discuss about the sketch requirements, matching design scheme, and encrypt various insurance methods as smart contracts. Extensive experiments were administered to analyse accomplishment of the framework foundation and security of the projected design. Blockchain would supply the capabilities to switch these different systems with one system that provides ability .With the utilization of good contracts and absolutely auditable history, Blockchain would modify peer-to-peer ability among participants at intervals transactions.

II. RELATED WORK

Marko Vukolić et al. (2017) Proposed that the present blockchain floor, specifically the new authorized systems, have some architectural limitations smart agreements run ultimately, all the nodes assassinates all smart agreements,

Revised Version Manuscript Received on 22 February, 2019

B. Lakshma Reddy, Dept of Computer Science and Engineering, Sathyabama University, Chennai, India.
(e-mail: bairilakshmareddy@gmail.com)

A. Karthik, Dept. of Computer Science and Engineering, Sathyabama University, Chennai, India. (e-mail: aravapallikarthik98@gmail.com)

Dr.S. Prayla Shyry, Assoc. Prof, Dept of Computer Science and Engineering, Sathyabama University, Chennai, India.
(e-mail: suja200165@gmail.com)

unanimity protocols are hard-coded, the trust model is static and not exile, and non-determinism in smart-agreements execution holds a heavy problem. Conquer these limitations is important for up each practical property of the blockchains, for example, conditionality and consistency, just as their non-functional properties, for example, achievement and adaptability. We discuss about these drawbacks within the setting of licensed blockchains, together with associate degree early interpretation of an Hyperledger material blockchain stage, and the method a remodel of an Hyperledger Fabric's design addresses them.

Christopher D. Clack et al. (2016) Proposed that the smart agreement arrangements support fair smart contracts, using operational parameters to connect legal agreements to standard code. Thus, the paper we tend to investigate the look landscape of potential formats for storage and transmission of good legal agreements. We establish essential needs and describe variety of key style choices, from which we imagine future development of patterned formats for defining and manipulating intelligent legal agreements. This provides a prior step towards supporting business adoption of sensible legal agreements.

Konstantinos Christidis et al. (2016) Proposed that inspiration by the new outbreak of interest around blockchains, we inspect whether they make a good linear unit for the web of Things (IoT) sector. Blockchains enable North American country to possess a distributed peer-to-peer network wherever non-trusting members will act with one another while not a trusty go-between, in a variable manner. We review however this mechanism works and conjointly investigate sensible contracts scripts that occupy on the blockchain that provide the automation of multi-step processes. Wherever applicable, we recognize resolutions and workarounds. The conclusion is the blockchain-IoT mix is effective and may cause important transformations across many industries, concrete the means for brand spanking new business imitations and new, distributed applications.

Wenting Li et al. (2017) Proposed that an present blockchain come out as an innovative tool that has the probable of positively impact the method, we draft a few online applications today. In some ways the blockchain innovation is however, still not sophisticated to serve for industrial standards. These systems generally need that each transaction (and their order of execution) square measure publicly on the market to any or all nodes within the system, that comes at odds with familiar knowledge sharing practices within the trade and block a centralized regulator from supervise the total blockchain system.

Thus, the paper has a liability to propose a completely unique blockchain design devised particularly to fulfil industrial standards. Our proposal holds the idea of satellite chains which will in private run totally different agreement protocols in parallel thereby importantly boosting the measurability premises of the framework. Our answer additionally accounts for a hands regulator that oversees the complete network, enforces special policies by means of smart contracts, etc. We enforced our answer and integrated it with Hyperledger cloth.

III. EXISTING SYSTEM

In the Existing System, there is no automatic process to identify the Insurance method and its security. In this insurance trade is heavily smitten by multiple methods between transacting parties for initiating, maintaining and shutting many reasonably policies. It's a time taking operation, not efficient and many security issues. Blockchain is not been achieved in the existing scenario.

IV. PROPOSED SYSTEM

In this delivered platform with blockchain as an framework service for supporting dealing execution in insurance processes. The insurance trade is heavily smitten by multiple methods between transacting parties for initiating, maintaining and shutting numerous reasonably policies. Transaction time interval, payment settlement time and security protection of the method execution are major issues. In this the system examine the excellent process of the treatment for a specific disease and also our system identifies if any illegal activity has been processed by the doctor. The system also commends the excellent treatment process to perform for a distinct disease in view of the follow of the previous patient's treatment.

V. ARCHITECTURE DIAGRAM

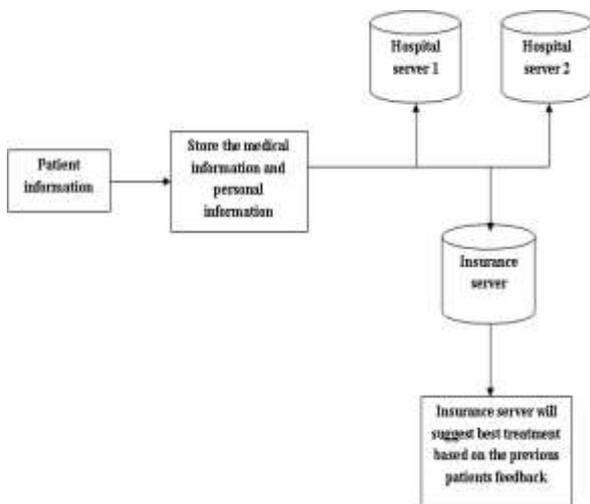


Fig. 1: System architecture

The system architecture represents the flow of the blockchain process between the hospitals and insurance companies and maintains the storage of data and the level of a security it provides. It processes by referring the patient's unique id. It creates blockchain enabled framework for diseases and it creates diseases as a key point and suggests a better treatment to the hospitals.

VI. STEPS IN THE PROCESS

1. Patient registration
2. Hospital server
3. Insurance server
4. Block formation
5. Best treatment recommendation

Patient Registration

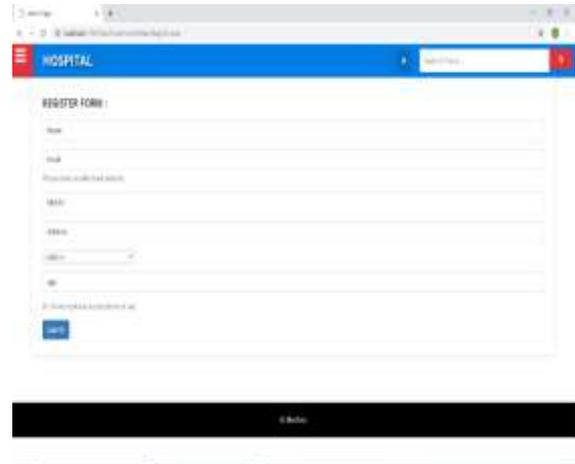


Fig. 2: Patient registration

Here the system stores the credentials of a patient like name, mobile number, email id, and what are all the medical issues all the statistics will be registered in the local hospital server. All the facts regarding patient details like personal facts and medical facts. Blockchain framework is implemented for every transaction between the hospital and insurance industries.

Hospital Server

ID	Name	Sex	Age	City
276	Am	Female	25	Hyderabad
280	Am	Female	25	Hyderabad
282	Am	Female	25	Hyderabad
480	Am	Female	25	Hyderabad
476	Am	Female	25	Hyderabad
482	Am	Female	25	Hyderabad
172	Am	Female	25	Hyderabad
184	Am	Female	25	Hyderabad
188	Am	Female	25	Hyderabad

Fig. 3.1: Doctor data

ID	Name	Address	City
1000001	Am	Hyderabad	Hyderabad
1000002	Am	Hyderabad	Hyderabad
1000003	Am	Hyderabad	Hyderabad
1000004	Am	Hyderabad	Hyderabad
1000005	Am	Hyderabad	Hyderabad
1000006	Am	Hyderabad	Hyderabad
1000007	Am	Hyderabad	Hyderabad
1000008	Am	Hyderabad	Hyderabad
1000009	Am	Hyderabad	Hyderabad
1000010	Am	Hyderabad	Hyderabad

Fig. 3.2: Patient data

All the patients record of the distinct hospital will be stored in their local server. It maintains all the patient facts who are all registered on that hospital.



In this section, like the patient medicines facts, treatment facts, disease facts will be stored on hospital server.

Insurance Server

id	Place	Ins	Medic	Cost
101	delhi	Healthcare	90000	100
102	delhi	Healthcare	70000	100
103	delhi	Healthcare	90000	100
104	delhi	Healthcare	80000	100

Fig. 4.1: Insurance claim data

id	Disease	Treatment	Price
101	Stroke	Medicine	1000
102	Stroke	Medicine	1000
103	Stroke	Medicine	1000
104	Stroke	Medicine	1000
105	Stroke	Medicine	1000
106	Stroke	Medicine	1000
107	Stroke	Medicine	1000
108	Stroke	Medicine	1000
109	Stroke	Medicine	1000
110	Stroke	Medicine	1000
111	Stroke	Medicine	1000
112	Stroke	Medicine	1000
113	Stroke	Medicine	1000
114	Stroke	Medicine	1000
115	Stroke	Medicine	1000
116	Stroke	Medicine	1000
117	Stroke	Medicine	1000
118	Stroke	Medicine	1000
119	Stroke	Medicine	1000
120	Stroke	Medicine	1000

Fig. 4.2: Insurance fixed data

Here multiple hospitals communicate with the insurance to climb the insurance amount. And the insurance server plays a very essential role in verifying anyway of they are paying their instalment amount properly and whether that patient is qualified for the treatment. But in this project, system also examine whether this specific treatment is effective for that specific medical problem, so insurance has got all the medical database and all the medical databases are investigated in view of the records. In this all the medical statistics is stored on the insurance company.

Blockchain Formation

```

{
  "id": 1,
  "disease": "Stroke",
  "treatment": "Medicine",
  "price": 1000,
  "timestamp": "2019-02-15T10:30:00Z"
}

```

Fig. 5: Blockchain formation

Here the patient data is examined and finally the disease is determined, and once disease is determined the blockchain is formed in view of an disease data. So, disease tag is unique for different patient. Same disease will affect for a greater number of the individuals that's why we maintain the blockchain for the disease. The system will create disease as a key point and suggesting a better treatment to the hospitals.

Best Treatment Recommendation



Fig. 6: Best treatment notification

And finally, the principal treatment is recommended to the patient in view of the previous records of the patient. Once block is created for specific disease, we do examine whether the specific treatment is genuine for the distinct patient. So, in view of the response and feedback from the previous patients, the system examines the health recovery of the patients and by analyzing that information, system suggests the foremost treatment to the patient. Here SVM algorithm is utilized to analyze the data and predicts the excellent treatment and suggests to doctor.

VII. ADVANTAGES

1. Secured Application.
2. Analysis the excellent treatment procedures.
3. Patients Eligibility and their transaction is analyzed.
4. Builds Trust among the common public.

VIII. CONCLUSION

Thus, the paper infers that through this the system suggests the doctor to give foremost treatment to the patient in view of the diseases and medical statistics. Here the system suggests the foremost treatment to the doctor by examining the health recovery database of patients. Here the system is creating Block chain enabled framework for diseases and in this the system will create disease as a key point and suggesting a better treatment to the hospitals.

REFERENCES

1. Vukolić et.al (2017), "Rethinking permissioned blockchains," in Proceeding of the ACM Workshop on Blockchain, Cryptocurrencies and agreements, ser. BCC '17. NewYork, NY, USA: ACM .
2. C. D. Clack et.al (2016) "Smart agreements templates: essential provisions and design options," arXiv preprint arXiv:1612.04496.
3. K. Christidis et.al (2016) "Blockchains and smart agreements for the IOT," IEEE Access, vol. 4, pp. 2292–2303.
4. I. Nath (2016) "Data exchange platform to conflict insurance fraud on blockchain," in 2016 IEEE 16th International Conference on Data Mining Workshops (ICDMW), pp. 821–825.
5. W. Li et.al (2017) "Towards adaptable and personal industrial blockchain," in Proceedings of the ACM Workshop on Blockchains, Cryptocurrencies and Contracts. ACM, pp. 9–14.



7. H. Watanabe et.al (2016) "Blockchain agreements: Securing a blockchain applied to smart agreements," in Consumer Electronics (ICCE), IEEE International Conferences on. IEEE, pp. 467–468.
8. F. Lamberti et.al (2017) "Blockchain or not blockchain, that is the question of the insurance and other sectors," IT Professional, vol. PP, no. 99, pp. 1–1.
9. C. Christian (2017) "Blockchain, cryptography, and consensus".
10. Cachin and Christian (2016) "Architecture of the hyperledger blockchain fabric".
11. E. Androulaiki et.al (2017) "Cryptography and protocol in hyperledger fabric".
12. Dr. S. PraylaShyry", Efficient identification of bots by K-means clusterings", Proceeding of the international conferences on Soft Computing System, Advances in Intelligent systems and Computing", pp 307-318, Springer India 2016.
13. Dr. S. PraylaShyry, Maria Sheeba," Literature review on the detection of bots in p2p network", International Journal of Applied Engineering Research, Volume 9, Number 24,pp. 23485-23489 2014.