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Explicitly Disclosing Clients Illness Catalogue Using Data Science Techniques

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Abstract: ***Across the world in our day-to-day life, we come across various medical inaccuracies caused due to unreliable patient's reminiscence. Statistically, communication problems are the most significant aspect that hampers the diagnosis of patient's diseases. So, this paper represents the best theoretical solution to achieve patient care in the most adequate way. In these pandemic days, the communication gap between the patient and the physician has begun to decline to a nominal level. This paper demonstrates a vital solution and a steppingstone to the complete digitalization of the client's illness catalogue. To attain the solution in a specified manner we are using adverse pre-existential technologies like data warehousing, database management system, cloud computing, big data, etc. We also persistently maintain the most secure, impenetrable infrastructure enabling the client's data privacy.***

Keywords: Illness catalogue, cloud computing, data warehousing, database management systems, big data.

I. INTRODUCTION

In general, we see an average citizen needs to visit the hospital once every quarter of a year. And some people try to be healthier than the average citizen, they visit the hospital less often. In both cases, many different problems arise with a common challenge. In the first case let us assume a patient is suffering from a long-suffering disease like diabetes. Then that patient must visit his doctor or a physician at regular intervals to ensure that his blood sugar level and health status are in a stable condition. And sometimes the doctor needs to have the patient's earlier medical history but in the existing system, it is not possible to retrieve that information with ease. And sometimes people migrate from one place to another and that changes the person's family doctor, and he must find a new doctor at that place. Then again, he should explain his past medical situation and the medication to him. That creates a huge scope for the occurrence of an error. Over time the patient may forget any medical conditions which he thinks are less but incorrect or might exaggerate about a health issue that was not actually that severe. This might lead to confusion of the physician and lead to improper diagnosis. A similar type of problem was raised in the late 1980s in the banking sector in our country. So as a result, they adapted to a new model where they started digitalizing all the documents and the accounts. Similarly, to solve our problem we are proposing the same model, where all the medical records of all the patients are digitalized and remotely accessible. This reduces the patient-doctor interaction, thus reducing the scope of occurrence of error. Generally, most patient records are in an unstructured format in the healthcare industry because the records kept by the hospitals are in the form of handwritten information, audio voice dictations, scanned documents, and IoT/device data. There are many advanced technologies and methodologies to convert this unstructured data into structured data. The converted information is stored in the database of the hospital. The collected information about the patient may have data and noise data. By using data warehousing techniques, we can remove those errors in patient information. The information of the patients is presented in the different hospitals in different formats in different databases so that before storing the data in the data warehouse we should convert the data into a universal understandable format. Data of the patients are exceptionally large difficult to store, maintain and perform database operations.

II. PROPOSED MODEL

In the present post-pandemic world, we frequently come across many ill health cases. The pandemic has shown a significantly large impact on public health. It caused a large disturbance in the daily routine of many individuals. This was also proved to be hazardous to many people. This also caused many small but long-lasting side effects to human beings. This created a sudden hike to the physicians. Generally, there are three types of patients. The first kind is those who are well aware of the disease and the cause of it. The people belonging to the second category are not so informative about their disease but can recognize that they are suffering from a disease. Finally, the people belonging to the third category are not even aware that they are prone to disease. And there are also some people who just refuse to get treated saying that they are very well. There may be several reasons for people to say this, which might also be considered as severe mental diseases.

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Treating the first kind is very easy as simple diagnosis and appropriate medication can result in healing the disease. And coming to the second type, these are considered as a moderate challenge to the physicians or consultants. A bit of deeper diagnosis is required to detect the illness and then should be medicated accordingly. Finally, the third type of patient these are considered to be impossible to treat. As they are not even aware of what their problem is. When these types of people are prone to any persistent or recurring diseases like diabetes or blood pressure that causes many problems. There are many negative possibilities like the patient forgetting his past medical records or allergies, and accuracy can never be expected from humans over time.

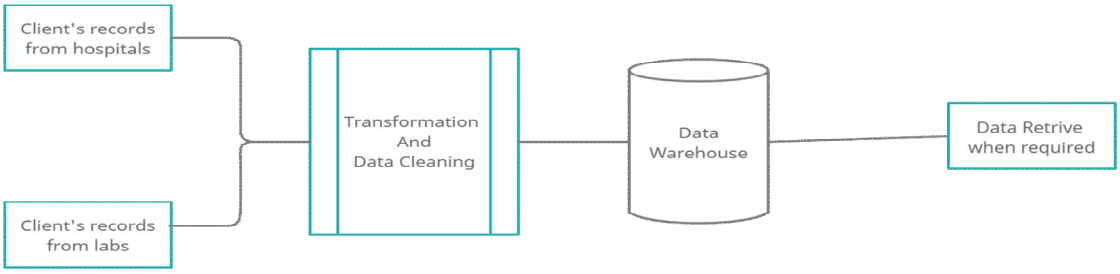


Fig 1: Block diagram of proposed model.

To avoid all these difficulties, we are proposing a model. The model described in the paper has four stages. Firstly, the different types of data are collected from their respective sources like hospitals and labs. Then the data collected is processed and cleaned for the duplicate entries and noise if any. Then the processed data is stored and synchronized with a dynamic database which is publicly hosted initially with the help of a cloud service provider. Then the customized security can be provided according to the requirements. Then finally the analyzed data which is published can be accessed by the physician with the patient's consent.



Fig 2: Flow chart of proposed model

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As shown above, in figure 2, we are going to maintain the data which is collected from different sources such as hospitals and labs. The data is stored in many types of hard media like prescriptions, lab reports, etc. The data collected will be cross-referenced with data in the database if the client data exists the data will be updated in the database else new record will be created for the client, and all the digital records that existed will be restructured and all the data will be updated in universally understandable digital format. After updating the records with the newly obtained data, it is then synchronized with the master database which stores the data of all the clients. Generally, access to this database is merely limited to the inside staff or the moderators and the developers who designed the network, and the service providers whose configuration files are to be matched with the software developed.

After the data is pushed into the local databases like SQL or mongo dB then it is connected to a hosting service which allows bypassing the network gateways and pushes it into the internet. This is done to enable remote access to the data. As health information is sensitive data in our society the required security measures are installed to maintain the dignity of the clients.

Finally, we end this by performing different mathematical and statistical operations to get a detailed report of the patient. By using this report physician can get an overview of the client's previous medical history. This is going to help the physician treat the clients efficiently.

III. CONCLUSIONS

The proposed model mentioned in this paper solves the burning problem with cutting-edge technology. By using this we are able to help to heal the diseases of the clients even if they are not aware of that. Thus, serving mankind in a great way in this post-pandemic era. We also attained the security for the sensitive data of each individual eliminating the possibility of data leakage leading to many civil crimes in an enclosed geographical area. This model helped to bridge the communication gap between the physician and the patient thus creating an efficient way of treatment to the needy. This model might not be of greater use to the educated and self-aware people but, very useful to the people who are very unaware of their health situation. Thus, eliminating the possibility of occurrence of negligence while communicating with the physician.

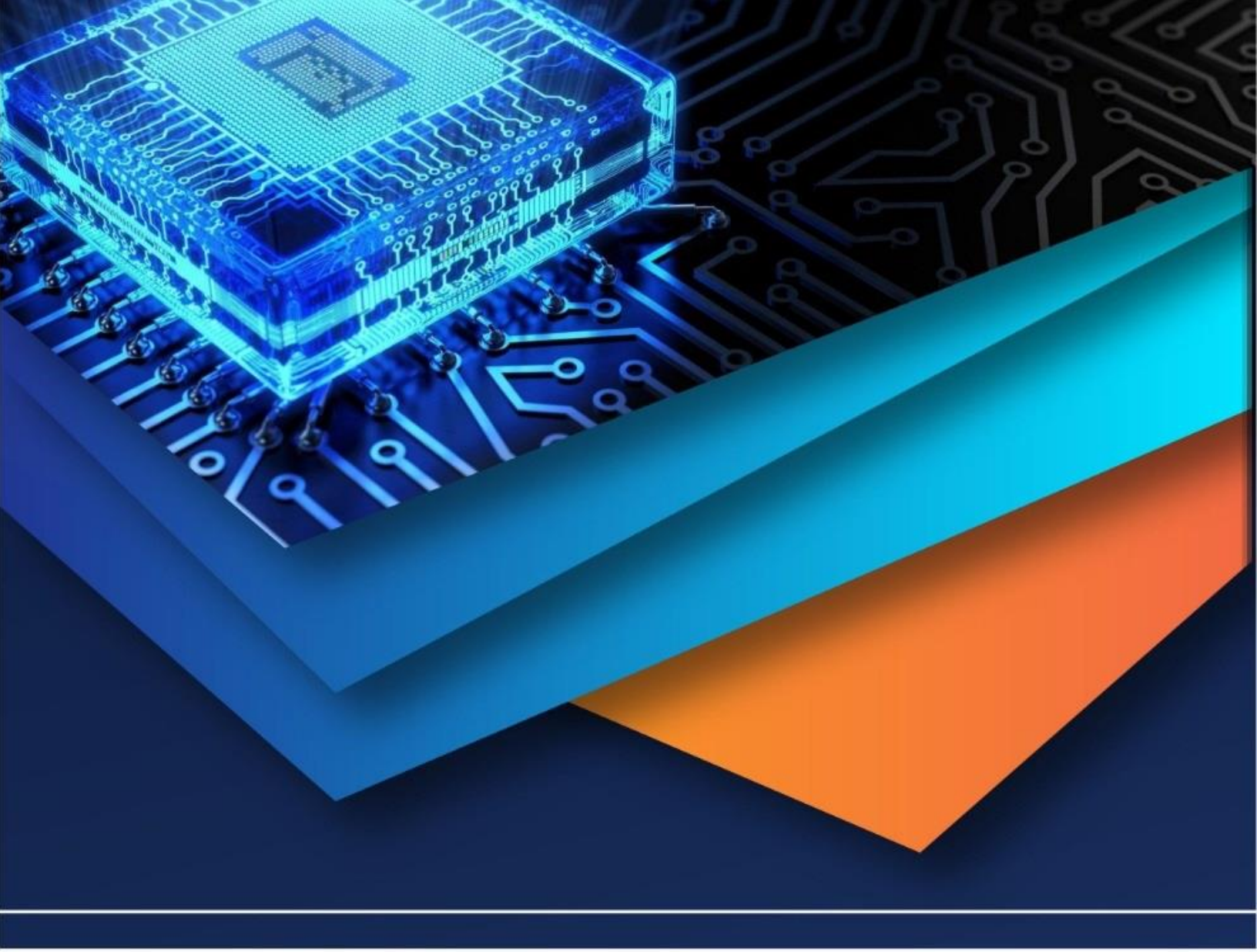
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