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DATA SCIENCE APPLICATIONS IN HEALTH CARE DATA TRANSMISSION

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Abstract

The studies and surveys that are already in existence in the field of data analysis have found that there is very complicated and undisturbed correlation between the daily human incidental movements and the identification of the health conditions. The smart health system has been the field of the interest within the researchers and analysts for such a long period of time. Health conditions are so complicated to predict because of their higher volatile and unpredictable nature which is completely dependent on the factors like ever changing health conditions of different people in different places of the world and so on. Predicting the health conditions depending up on the data that is already gathered which is named as the health information alone has become not so sufficient to predict the ups and downs of the health conditions. Numerous analyses regarding the health conditions studies have been conducted to attain the accuracy by utilising many algorithms like naïve bayes regression, data analytics and the deep learning. In this research paper, we have tried **1 to accelerate the** rate of accuracy of the smart health care systems by collecting huge amount of time series data and for the sake of analysing the data with the help of data analytics models to predict the of health conditions. The amount of the verbal data that is available and analysed during few surveys and studies were insufficient and as a result the health care systems that are with low accuracy rates were observed. The accuracy of the models that run with the help of the data analytics methods are completely dependent on the amount of information provided for the sake of the training.

Keywords: Maximum 5 keywords; Sentence case; Separate by semicolon (;) between keyword

1. Introduction

Smart health care system is one from those very complex, [2] sophisticated, and complicated way to succeed in any type of business. Through this research paper we proposed a method to recognise the smart health system with help of data analytics. [8] The amount of data is directly proportional to the accuracy of your classifier and the provided attributes. fields are completely dependent on this entity called health conditions to make money and to minimize the risks. Through this research paper we proposed a method to recognise the smart health system with help of data analytics. [8] The amount of data is directly proportional to the accuracy of your classifier and the provided attributes.

fig 1: cycle of health care challenges **3 in big data** analytics

fields are completely dependent on this entity called health conditions to make money and to minimize the risks. Health conditions analysing systems will help the people to be cautious and common civilian can gain knowledge and information about the health fitness that depend on the health conditions about various health conditions of different organs of the body. [7] The algorithm we proposed will be helpful in predicting the future of many fields and departments by using different open-source libraries that makes this a highly unpredictable business entity a bit more vulnerable to predict. [11] this research paper shows an example for the implementation of predicting the stock by giving us the results which can be accepted. When it comes to identifying crucial health issues, the product **1 is based on a** vast array of axioms and resources, **some of which** may or may not hold true in real life. [6] Smart health care system can sometimes be considered as important when one invests the money without the prior knowledge about the gains and so a process that can analyse and predict the smart health care system fluctuations.

fig 2: basic and health services **2 of big data analytics**

This system that we are proposing is a potential in providing wise generating modules. The prices that costs by the health complications is highly unpredictable with very constant fluctuations. **3 Smart health care system** can be named as one of the oldest and one from those highly effective methods

where any organisation or a person can access genuine information about health conditions. [4] The principle of smart health care system is quite simple to understand. We must recognise the of the health conditions so that we can prevent the damage for human lives. And this where the technology involves in the image. 2 Data analytics is such a tool that helps us attain the situation that we want regarding smart health care systems.

Data analytics is highly dependent on the information collected. [13] Data analytics can be considered as an insanely powerful tool and it really have many mind blowing applications. so, it is very much 1 important to understand that data is such a valuable component and analysis of the data or the information that has been collected is really a time taking and tedious work that need to be performed with utmost care and attention. [2]data analytics has found 3 a lot of popularity along with its applications in practical lives and has developed further into different streams like deep learning and neural networks,

this research paper is strictly limited to only supervised data analytics during the generating of smart health care systems. The sole idea of data analytics is simplifying the task that demands the human efforts and human intelligence. [14] 2 The most common mistakes made by the researchers in the field of supervised data analytics is Poor annotation of testing and training datasets, Bad understanding of collected data and assumptions, Misunderstanding the data provided, Unable to understand the objectives, Not Avoiding the leakage, Not collecting enough information that is required to train the classifier, Usage of data analytics techniques though it's not really needed. [18]This paper gives a deep insight regarding the implementation of data analytics 1 in predicting the complete futuristic data. there are tremendous ways and much more techniques available to solve and handle different problems.

fig 3: 15 block diagram of process of big data analytics

2. Methods

Healthcare as a big-data repository

Health care can be considered as the several dimensional modules that is highly motivated to

diagnosis, prevent and for the sake of the treatment of impairments in the human beings or any other health related issues. The primary ³ elements of the usual health care system are the health facilities, health professionals. The health professionals those who belongs to several different streams like nursing, medicine, physiotherapy, psychology, dentistry and so on. Health care is certainly needed at different stages which is completely dependent on the emergencies and the urgency of the instance of the scenario. It is regarded by medical professionals as the focus of the consultation. Accurate medical care, including diagnosis and treatment, necessitates the use of specialists, cutting-edge medical testing, and other measures.

1.1.1.1 Electronic health records

It is imperative to keep in mind that the National Institutes of Health recently unveiled the "all of us" effort, which has the goal of gathering EHR data from one million patients and up, as well as socio-behavioural, medical imaging, and environmental data ⁷ over the next few years. The benefits of using namouras for managing advanced health care data have been demonstrated by EHRs. Below, we describe some of the characteristic advantages of using EHRs. ³ Electronic Health Records (EHR): Data science techniques enable the secure and efficient exchange of electronic health records among healthcare providers, hospitals, and other healthcare organizations. Telemedicine: Data transmission is a vital component of telemedicine, which involves remote healthcare services. Data science enables real-time interaction and seamless sharing of medical information between healthcare providers and patients. Healthcare practitioners now have better access to a patient's complete medical history thanks to EHRs. Medical diagnoses, prescriptions, information on known ⁹ allergies, demographics, clinical narratives, and test results from various laboratories are all included in the material. It allows for video conferencing, transmission of medical images and diagnostics, and remote monitoring of patients. Medical Imaging: ⁴ Data transmission is essential for sharing medical images among imaging centres, radiologists, and other healthcare professionals. By eliminating errors in prescription dosage and frequency, overcoming such logistical problems ⁷ has resulted in a decrease in the number of drug allergies.

1.1.2 Big data in biomedical research

The biological module, ⁴ such as the human body or the human cell, displays chemical variations

whereas the human body displays physical interactions with complex dynamics. A biological or biomedical experiment will typically acquire a lot of data on a very minute and less intricate component to comprehend the interdependences of various elements and events of such a complicated system. Therefore, it necessitates the much less difficult tests to produce a wider perspective of the relevant biological phenomenon. When we consider this, we can see very clearly that the more information we have, the better understanding we can have of how biology works. To make up to this idea the advanced techniques have been developed at a huge pace. For the instance, we can easily understand that the amount of the data that has been generated since the integration of the efficient technologies like genome wide association studies and next generation technologies to integrate deeper into the human genetics. The NGS-based data offers us access to information at greater depths that were previously very difficult to acquire and gives the experimental scenario unquestionably a newer dimension. It has improved the level of detail at which we can capture or track the biological occurrences connected to a given disease in real time.

1 The Generation of the smarter health care modules is not an easy task and predicting the expenses of the smarter health care module is completely a complicated due to numerous uncertain factors involved and many other variables that show an impact on the market value and a very negative effect on the marketplace value on a that certain day that includes the information regarding investors and the economic conditions. 3 Smart health care system regarding the political activities or towards a certain business organisation. Because of such factors and issues the inventory markets are at a stake of risk. 6 Various changes that include very unexpected fluctuations deep inside the health conditions. The collections of the smart health care system are commonly non-parametric and dynamic, noisy and mostly chaotic is most of the times. Through this research paper we proposed a method to predict the highly unpredictable smart health care system with help of data analytics. The algorithm we proposed will be helpful in predicting the future price of any stock for gain by using different open-source libraries that makes this a highly unpredictable business entity a bit more vulnerable to predict. The methodology that we are discussing the research paper is about the data analytics in smart health care system. The main goal of this study work is to compare various data analytics generating strategies with the aid of various classifiers. The comparison's outcomes will depend on

various factors. **1** An artificial neural network can be thought of as a computer system designed to carry out the functions of a biological neural network, which can be thought of as carrying out life duties. Examples will help you understand these specific modules. A set off collection of nodal data, which could be thought of as artificial neurons, **2** is used by ANN. These artificial neurons can communicate with one another, acting like the brain itself. **4** In the implementation of ANN, a signal can be described by a value, often a real number, and the output of the neuron is determined with the help of non-linear sum function which can be considered as the input. The link amongst every node can be called as the edge, and every node will possess a value that relates to it. If the value minimises, which results in strength of the signal will be elevated. Usually, the neurons can be arranged into the layers. Each layer will undoubtedly carry out a different set of operations in relation to inputs. From the input layer, signals travel to the output layer. Signals can oscillate back and forth between layers repeatedly before producing an output. K-Nearest Neighbour performs a regression and classification without utilising any sort of parameters. The input **2** can be considered as the data sciences examples within the space for the features.

1 The accuracy of the models that run with the help of the deep learning algorithms are completely dependent on the amount of information provided for the sake of the training. The amount of the verbal **6** data that is available and analysed during few surveys and studies were insufficient and as a result the system generations that are with low accuracy rates were observed. **1** In this research paper, we have tried to accelerate the rate of accuracy of the medical expenses generations by collecting huge amount of time series data and for the sake of analysing the data with the help of deep learning models such as neural prophet algorithm **8** and to predict the prices of the future health complications. The object can be categorised to its own class in the classification of data sciences, **1** which can be the most amongst its nearest neighbours of data sciences; the outputs can be considered as the class that has been chosen already. The output **2** can be considered as the sum of all the values in the regression from its closest k neighbours. Because the function is locally approximated, data sciences is a form of lazy learning. Because each neighbour can be assigned a weight, the higher weights are distributed to the nearest lower weights and the neighbours are assigned to the farther. By utilizing the techniques, support vector machines **2** can be used to produce

regressions and classification analyses. A training set of examples for SVM is given, and each example can be classified into one of two groups. These examples can be used to better categorize SVM and a select few more examples. These illustrations can be represented by points for the sake of illustration, and they can aid in mapping into a place to display categorization segmentation. arbitrary forests can be used for the purposes of categorization, regression, and the decision tree creation process. RFs to the training set can correct the decision trees' inclination of overfitting.

These artificial neurons can transmit impulses to one another, acting like the biological brain. In the implementation of ANN, a signal can be represented by a number, often a real number, and the output of the neuron is generated with the aid of a non-linear sum function, which can be thought of as the input. Every node will have a weight attached to it, and the connection between each node is known as the edge. If the weight is minimized, the signal's intensity will be increased. These neurons can typically be inserted into the layers. For testing purposes, we would need to provide the input, such as a combination of features, to the perfectly trained classifier and compare the results with the original label. This usually aids in the creation of a successful model. The classifier that is with accuracy less than 95% is generally considered as the useless and waste of time and even the 5% can be a huge loss to the individual or the organisation. Accuracy can be considered as a very important factor in this data analytics model. We must understand the real and practical terms of the term accuracy. Big data analytics is a process where all the features must be labelled. In this research we will regulate the classifiers in a way that learns all the information arrangements of the different combinations of features results in which of the label. The classifier will attain the features and maps out the labels and will remember it. It usually records the combinations of the features and their respective labels which will be the stock price in our case. Then, to move forward, it discovers the pattern that the feature is employing to produce the relevant label. This is how supervised data analytics often operate. We further analysed the data and eliminated the crucial information that the classifier will need. This can be viewed as a very significant step that should be handled carefully. A data misleads or a small error in extracting the crucial and valuable data can result in a model failure or loss generation, as well as a very ineffective classifier. Generalization is one of the most likely outcomes only if, The information of the other remaining subject differs from the features extracted,

which are specific regarding the subjects being employed and will undoubtedly vary from subject to subject.

3. Results and Discussion

Once our model gets ready, we can utilise **1 the model to** acquire the required results in any other we need. For the better understanding we are plotting **the graph for** our results **based on the** requirements that are discussed in our research. A series of examples for SVM that fall into one of two groups are provided. Depending up on the examples, SVM can be futuristic categorize many few other examples. The sole idea **2 of data analytics is** simplifying the task that demands the human efforts and human intelligence. this paper gives a deep insight regarding **the implementation of data analytics in** predicting the complete futuristic data.

fig 4: applications of **3 big data analytics in health care** stream

Electronic Health Records (EHR): Data science techniques enable the secure and efficient exchange of **electronic health records** among healthcare providers, **hospitals, and other** healthcare organizations. **4 Telemedicine:** Data transmission is a vital component of telemedicine, which involves remote healthcare services. Data science enables real-time interaction and seamless **sharing of medical information** between healthcare providers and patients. **It allows for video conferencing, transmission of medical images** and diagnostics, and **remote monitoring of patients**. Medical Imaging: **Data transmission is essential for** sharing medical images among imaging centers, radiologists, **and other healthcare professionals**. **3 Remote Patient Monitoring:** Data science facilitates the continuous monitoring of patients' **vital signs and** health parameters through data transmission. Health Information Exchange (HIE): Data transmission plays a crucial **8 role in the** electronic **sharing of patient data** among **healthcare providers and** organizations participating in Health Information Exchanges.

4. Conclusions

Accuracy ² can be considered as a very important factor in this data analytics model. We must understand the real and practical terms of the term accuracy. Big data analytics is a process where all the features must be labelled. so, it is very much ¹ important to understand that data is such a valuable component and analysis of the data or the information that has been collected is really a time taking and tedious work that need to be performed with utmost care and attention. there are tremendous ways and much more techniques available to solve and handle different problems. this research paper is strictly limited to only supervised data analytics during the generating of smart health care systems ² Data analytics can be considered as an insanely powerful tool and it really have many mind-blowing applications. data analytics is highly dependent on the information collected. data analytics has found a lot of popularity along with its applications in practical lives and has developed further into different streams like deep learning and neural networks.

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