"Data Analysis of Hospital Management System and Provide Personalize Hospital Services"

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Abstract

These massive quantities of health data, which can be regarded as big data ,hold the promise of supporting a wide range of medical and healthcare functions ,including clinical decision support, disease surveillance, and population health management when health data analysis is performed properly. The analytical challenges that come with the availability of big health data are many and can be summarized as the integration of multi-modal data coming from different sources to generate a semantically consistent dataset. Health is generating large volumes of data that can provide invaluable insights into clinical and operational aspects of healthcare delivery. There is a general lack of specialized and integrated health data analytics platforms that offer technical methods to support the entire health data analysis pipeline i.e. health data selection, integration, analysis, visualization and sharing. This paper proposes the technical architecture of a health data analytics platform that offers a technical solution for analyzing big health data originating from multiple sources with heterogeneous terminologies and schemes .A key aspect of the architecture is data standardization, where we have used SNOMED-CT as a terminology standard to standardize health data from multiple sources.

Keywords: *Big-data, Json, Python , Django framework, Restful API.*

1. Introduction

Healthcare is generating a large amount of data given the initiatives of EHR, personal health records, personalized medicine & clinical studies. There is an imminent need to analysis the health data in order to generate both Clinical & Operational intelligence that will impact health system efficiency, patient safety & discovery of new intervations. These massive quantities of heath data , which can be regards as big data , hold the promise of supporting wide range of medicine & healthcare function including clinical decision support , disease servilleance and population health management when health data analysis is performance properly. The analytical challenges that connect with the availiability of big data are many & can be summarized as the integration of multi-model data coming from the different sources to generate a semantically consistent dataset.

2. Literature Survey

A literature survey was started to understand the need for automatic generation of security.

As mention in [1] this paper proposed a flexible system offering a semantically tagged for encoding and decoding the datasets for security purpose. Input datasets include user information disease data. The input data is in non structure format and for analyzing process job there are components like data preprocessing, feature extraction and pattern minning .

In [2] presented all electronic medical records should be protected through ownership controlled encryption ,enabling transmission, access and secure storage ;the maintenance of electronic information should preserve the content authenticity , patient privacy and data integrity; the information sharing and access should provide source verification through signatures and certification process against unauthorized access or change in EHR content.

In [3] a system which offers, the proposed system performs data standardization, data integration , data selection , data analysis and data visualization.

In [4] a system has proposed ,the entire government system can realize benefits from utilizing big data technologies. To successfully identify and implement big data solutions and benefits from the value that big data can bring the goal of effective citizen care management can be achieved by providing an effective data driven services to citizens by predicting their needs based on the analysis of survey conducted among different classes.

3. Architecture

We have two sections 1.Heath Care Organizations 2. Admin login. Admin module consist of updated database management, server management. Admin module consist of add gather datasets and generated statistical & graphical format will be added to Admin section.

The work flow of the proposed framework is implemented as follows :

1. When the application starts the users and admin authentication takes place.

2. The admin has right to gatherers datasets records like in Json format as per time database will updates the record.

3. The users has right to request for data accessing and system will represent the result of accessing data and provides the personalized services . Teacher can give difficulty level to questions. After generations of result the users and researches will be easy to predict the diseases and understand the situations.

4. The Machine learning algorithms are used for generations the results in statistical & graphical format and provide personalized services .
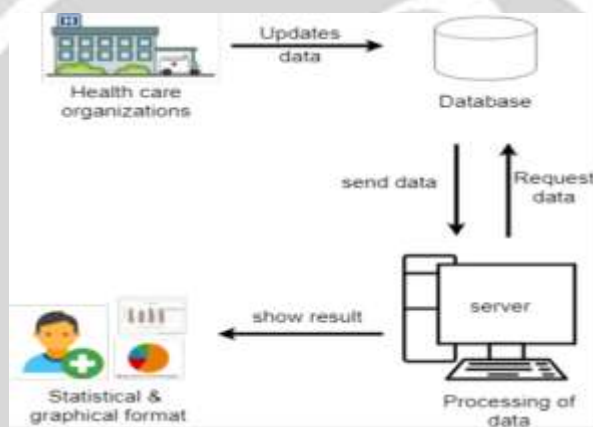

Fig1.Architecture of System.

4. Methodology

Pandas and Numpy (Algorithm):

Collecting dataset froms:- https://healthdata.gov Dataset required is of the type JSON. Which can easily converted into the executable code. Analytical algorithm are build up using python libraries called as pandas and numpy. Pandas is an open source BSD-licensed library providing high performance easily to use data structures and data analysis tools for the python programming language. Python has long been great for data mining and preparation, but less so for data analysis and modeling. Pandas helps fill this gap, enabling you to carry out your entire data analysis workflow in Python without having to switch to a more domain specific language like R. Combined with the excellent I Python toolkit and other libraries, the environment for doing data analysis in Python excels in performance, productivity, and the ability to collaborate. Pandas allows us to focus more on research and less on programming. We have found pandas easy to learn, easy to use, and easy to maintain. The bottom line is that it has increased our productivity.

NumPy is module for Python. The name is an acronym for "Numeric Python" or "Numerical Python". It is an extension module for Python, mostly written in C. This makes sure that the precompiled mathematical and numerical functions and functionalities of Numpy guarantee great execution speed. NumPy riches the programming language Python with powerful data structures, implementing multi-dimensional arrays and matrices.The implementation is even aiming at huge matrices and arrays, better know under the heading of "big data". Besides that the module supplies a large library of high-level mathematical functions to operate on these matrices and arrays.

Algorithm

1. Take datasets as a input.

2. If the dataset has more features and condition then apply it on data parameters.

3. The datasets generated from the Json are evaluated and applying filtering and preprocessing steps.

4. Classify and filters the datasets using pandas and numpy.

5. .Analysis of datasets.

6. Find the accuracy of the model data and predicting diseases.

5. Expected Result

Given input datasets to the system will is any type of dataset. The format will be like Json. Those data can be collected from different health organization .Repetition of datasets will be collecting as we are checking and filtering of those data and represent in statistical data format .Multiple updated datasets can be collected at any time.

6. Advantages

1. Help to preventing disease.

2. Evaluate the health risk.

3. Provide future need of healthcare.

7. Limitations

1. Difficulty in maintaining global standards and consistent data.

2. If organizations provides wrong data then statistical result will be false.

8. Application

This system helps to the health department to understand spreading to the virus and to study spreading of disease rigion by rigion.

System help to the Medical, Researches for Educations and Research purpose.

Conclusion

Proposed system will help organizations and research persons to create effective various kinds of graphical data visualization to users. The system's presents a data analytical framework for hospital management analysis and personalized health services. The system allows to present analytical result can serve as important for personalized healthcare applications. Moreover, the system handle the various algorithms for data analysis and provide various kinds of graphical data visualization to users. The users logs on the system after effective identification authentication in the browser, extracts the system. By using proposed system the updated datasets will be providing personalized health services.

Acknowledgement

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